

# 当 CockroachDB 遇上 Kubernetes

-- 基于 Kubernetes 部署 CockroachDB

浙江 · 杭州 · 全民直播 — 唐小吉



# CockroachDB

开源

NewSQL

极强生存能力

分布式部署、可扩展性

分布式事务、强一致性

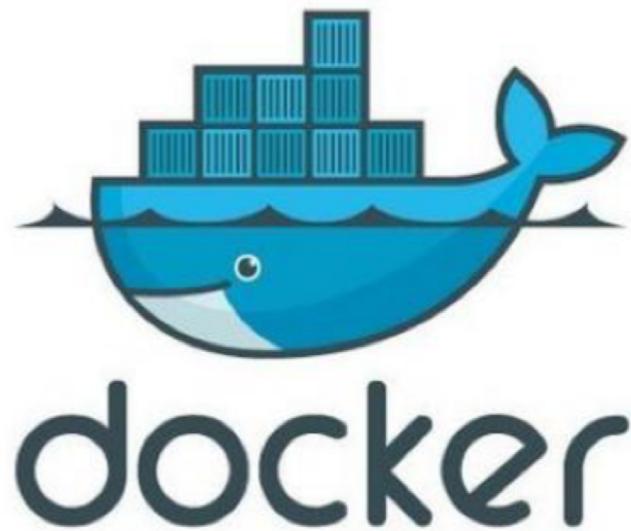
.....



 Cockroach DB

## 容器引擎: Docker

- 开源
- 虚拟化
- 应用隔离



## 容器编排系统: Kubernetes

- 开源
- 自动化部署、伸缩
- 资源配置

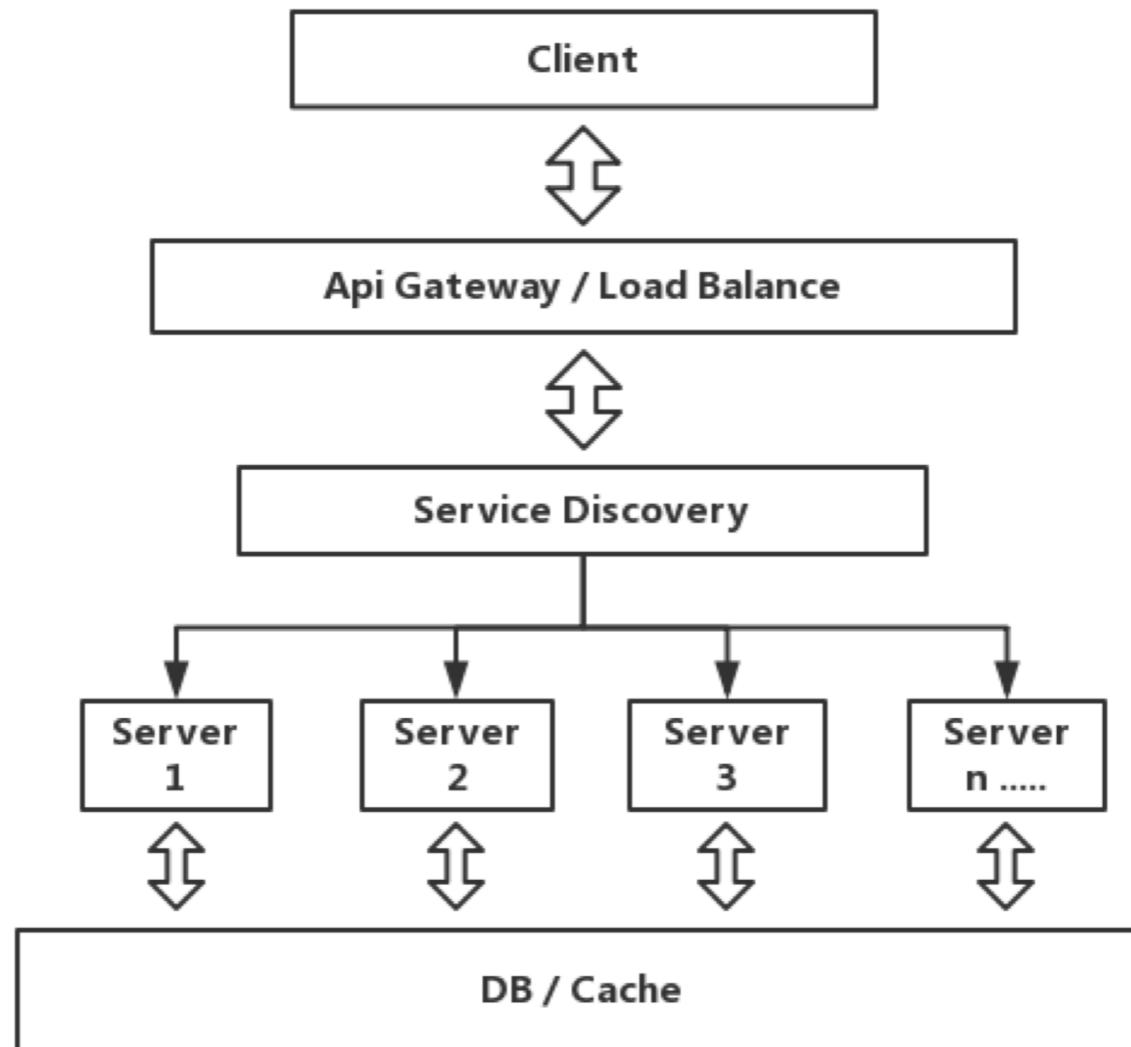


**Warning:**

Running a stateful application like CockroachDB in Docker is more complex and error-prone than most uses of Docker. Unless you are very experienced with Docker, we recommend starting with a different installation and deployment method.

- 有状态的应用
- 应用的状态

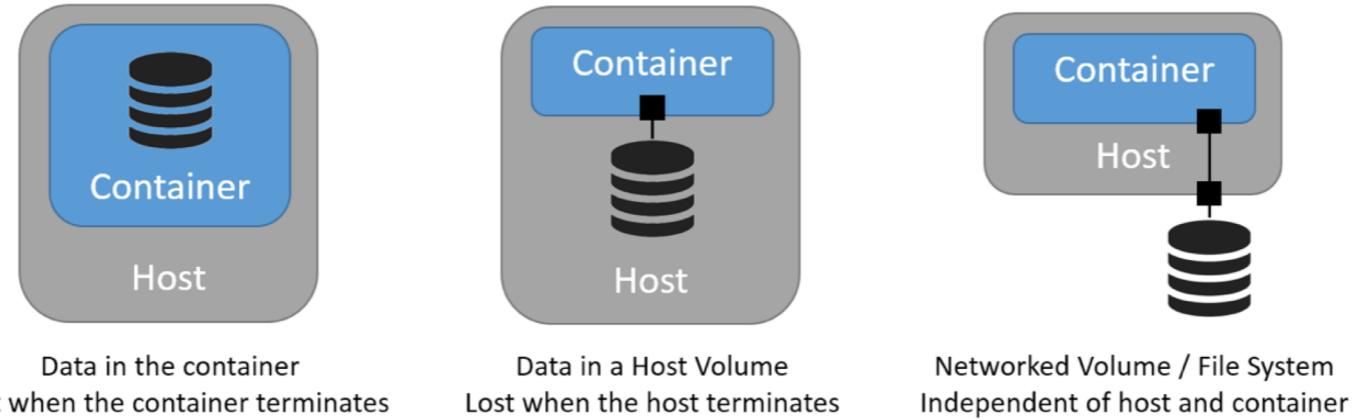
## Docker/Kubernetes/微服务时代的服务架构：



## 无状态服务的特性:

- 服务与数据隔离
- 数据存储于外部数据库或缓存
- 服务只搬运和操作数据
- 服务对数据的影响最终仍然作用于外部存储单元

# 用 Kubernetes 部署 CockroachDB ? What ? 说好的无状态呢 ?

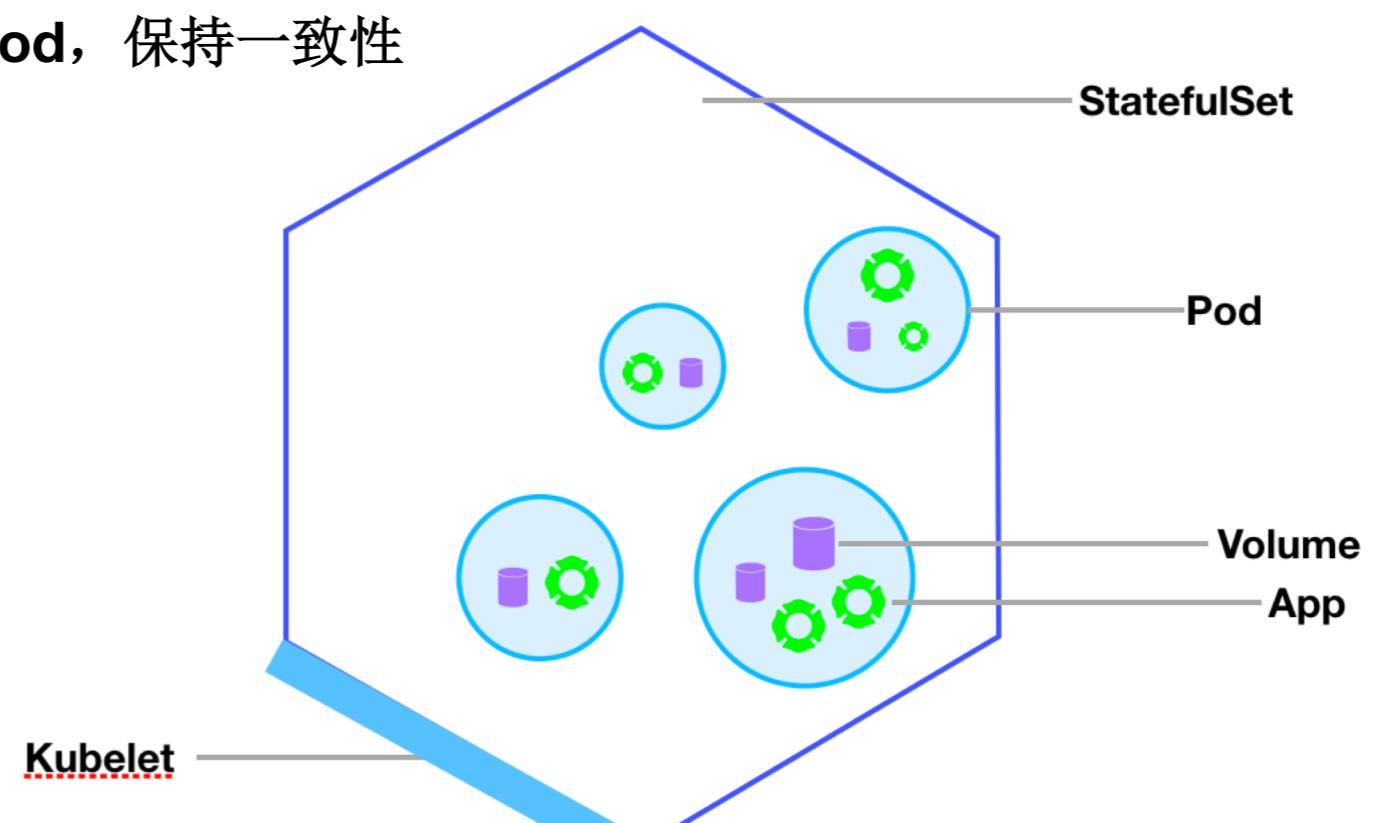


- 存容器、存宿主机？靠谱吗？
- 分布式部署，全量同步要得？
- 独立存储，安全性？可靠性？

## StatefulSet 机制

Pod 自动补全恢复

具有唯一标识符的 Pod，保持一致性

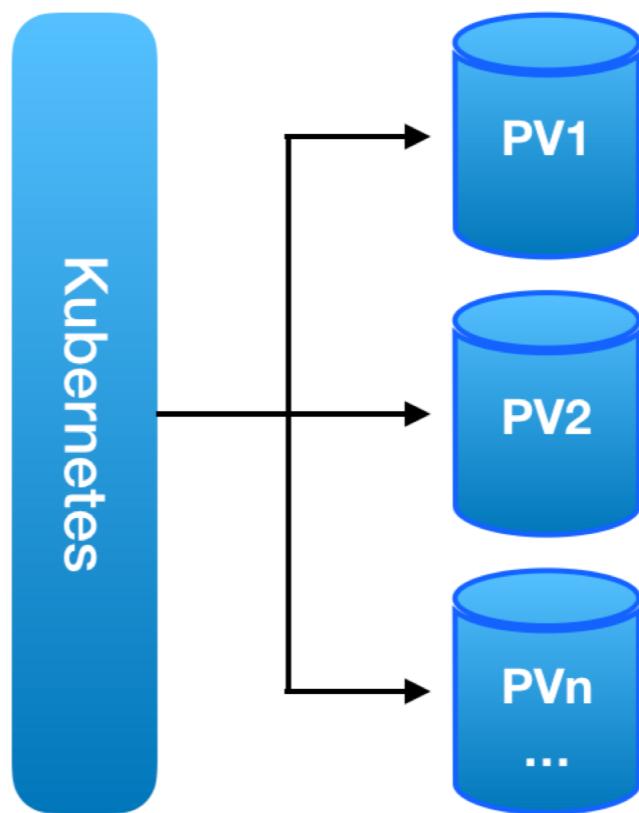


## 数据存在哪才靠谱 ? Persistent Volumes

远程磁盘

自动副本补齐

可移植性



## 下载配置文件

<https://github.com/cockroachdb/cockroach/blob/master/cloud/kubernetes/cockroachdb-statefulset.yaml>

## 创建集群

```
$ kubectl create -f cockroachdb-statefulset.yaml
```

service "cockroachdb-public" created

service "cockroachdb" created

poddisruptionbudget "cockroachdb-budget" created

statefulset "cockroachdb" created

## 查看服务状态

```
$ kubectl get services
```

NAME	READY	STATUS	RESTARTS	AGE
cockroachdb-0	1/1	Running	0	29s
cockroachdb-1	0/1	Running	0	9s

## 查看 Pod 状态

```
$ kubectl get pods
```

NAME	READY	STATUS	RESTARTS	AGE
cockroachdb-0	1/1	Running	0	1m
cockroachdb-1	1/1	Running	0	41s
cockroachdb-2	1/1	Running	0	21s

## 启动应用

```
$ kubectl run cockroachdb -it --image=cockroachdb/cockroach --rm --restart=Never -- sql --  
insecure --host=cockroachdb-public
```

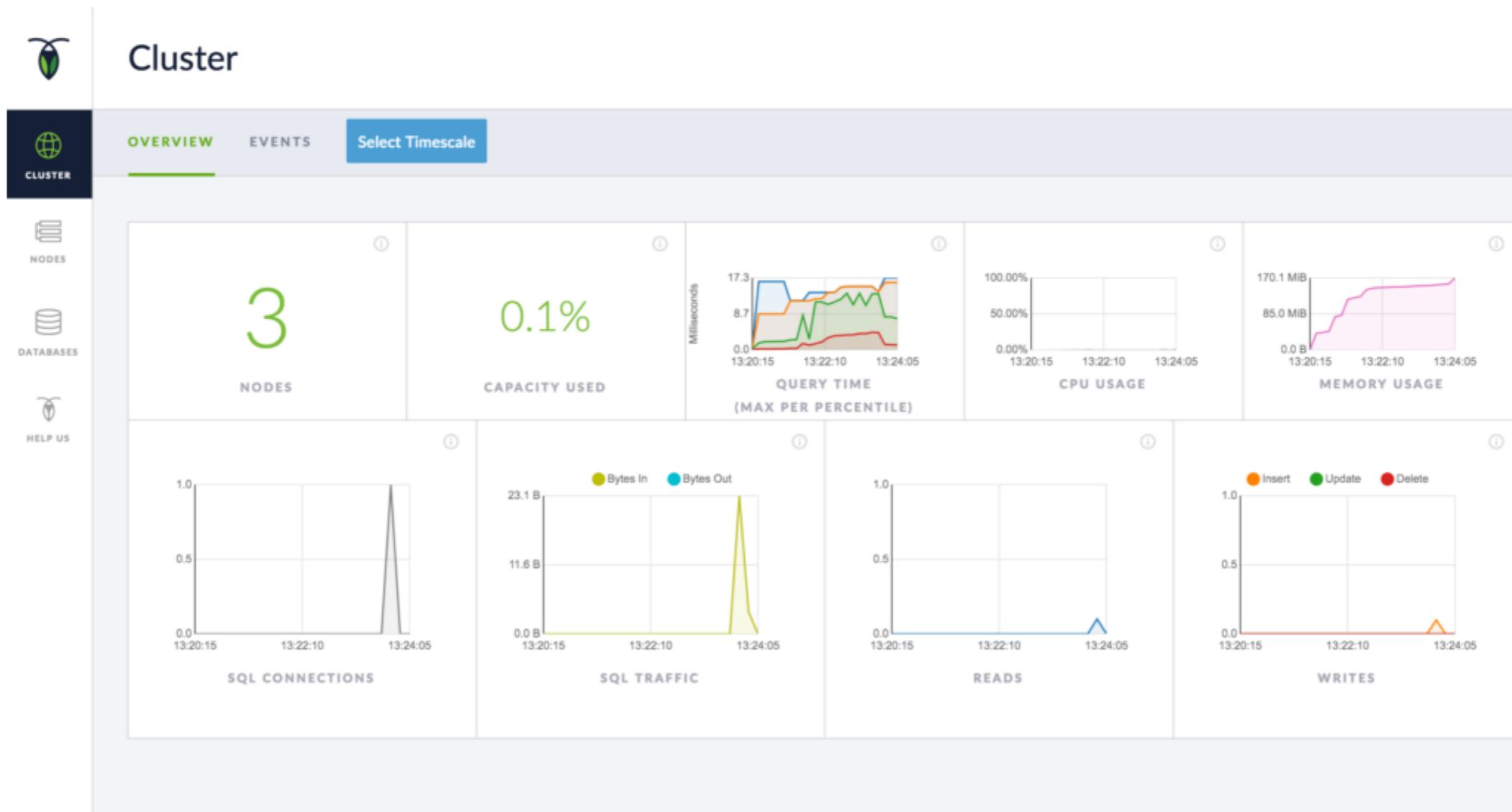
## 像普通数据库那样使用 CockroachDB

```
root@cockroachdb-public:26257> CREATE DATABASE bank;
CREATE DATABASE
root@cockroachdb-public:26257> CREATE TABLE bank.accounts (id INT PRIMARY KEY, balance DECIMAL);
CREATE TABLE
root@cockroachdb-public:26257> INSERT INTO bank.accounts VALUES (1234, 10000.50);
INSERT 1
root@cockroachdb-public:26257> SELECT * FROM bank.accounts;
+-----+-----+
| id | balance |
+-----+-----+
| 1234 | 10000.5 |
+-----+-----+
(1 row)
```

# CockroachDB 自帶了 AdminUI

```
$ kubectl port-forward cockroachdb-0 8080
```

<http://localhost:8080/>



## 给集群制造一点麻烦

```
$ kubectl delete pod cockroachdb-3
```

```
$ kubectl delete pod -selector app=cockroachdb
```

## 轻松地对集群进行缩放

```
$ kubectl scale statefulset cockroachdb --replicas=4
```

## 关闭集群

```
$ kubectl delete  
statefulsets,pods,persistentvolumes,persistentvolumeclaims,services,poddisruptionbudget -l  
app=cockroachdb
```

```
$ gcloud container clusters delete cockroachdb-cluster
```

**Thanks !**