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Ignazio Pedone

Roma, 03/10/2019

Longhorn on Rancher

Orchestrating cloud-native distributed block storage
using containers and microservices

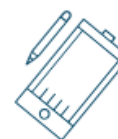
Binario Etico



- Cloud and Infrastructure Automation
- ✓ Deployments, migrations
- ✓ Support, ToJ, CI/CD
- ✓ FOSS technologies
- ✓ Rancher official partner



RETE ITALIANA
OPEN SOURCE



Training



Security Audit



Automation



Consulting



Agenda

- Kubernetes open challenges
- ***Rancher*** overview
- Persistent storage concepts in Kubernetes
- RWO vs RWX - Deployment vs StatefulSet
- Distributed Block Storage Software: ***Longhorn***
- Demo: how to deploy a simple service
 - **Atlassian Confluence** server
 - Rancher HA
 - Longhorn support for DBS

Kubernetes

- Pods
- Deployments
- Services
- Config maps
- Ingresses



Kubernetes: open challenges

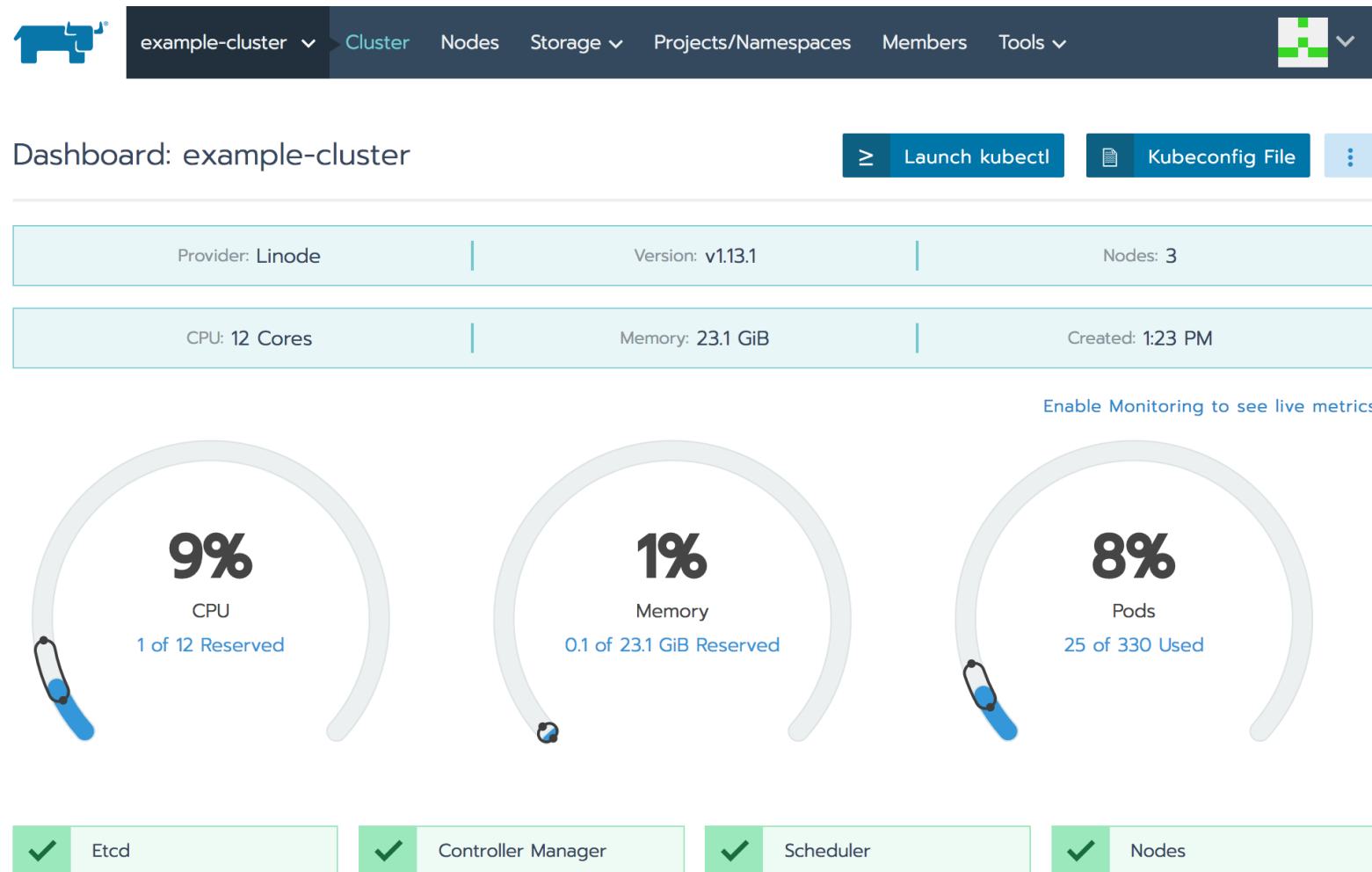
- With so so many ways to deploy, how do I deploy consistently **across different infrastructures**?
- How do I implement and manage **access control** across multiple clusters (and namespaces)
- How do I integrate with a **central authentication system**?
- How do I **partition clusters** to more efficiently use my resources?
- How do I manage **multi-tenancy**, multiple dedicated and shared clusters?
- How do I make my clusters **highly available**?
- Ensure that **security policies** are enforced across clusters/namespaces
- Monitoring – Do I have sufficient visibility to detect and to **troubleshoot issues**?
- Usability - Kubernetes abstraction and modularized separation of concerns makes it powerful, but simultaneously makes for a steeper learning curve
- Usability - Users can't really leverage prior Docker knowledge to write K8s manifests

Rancher

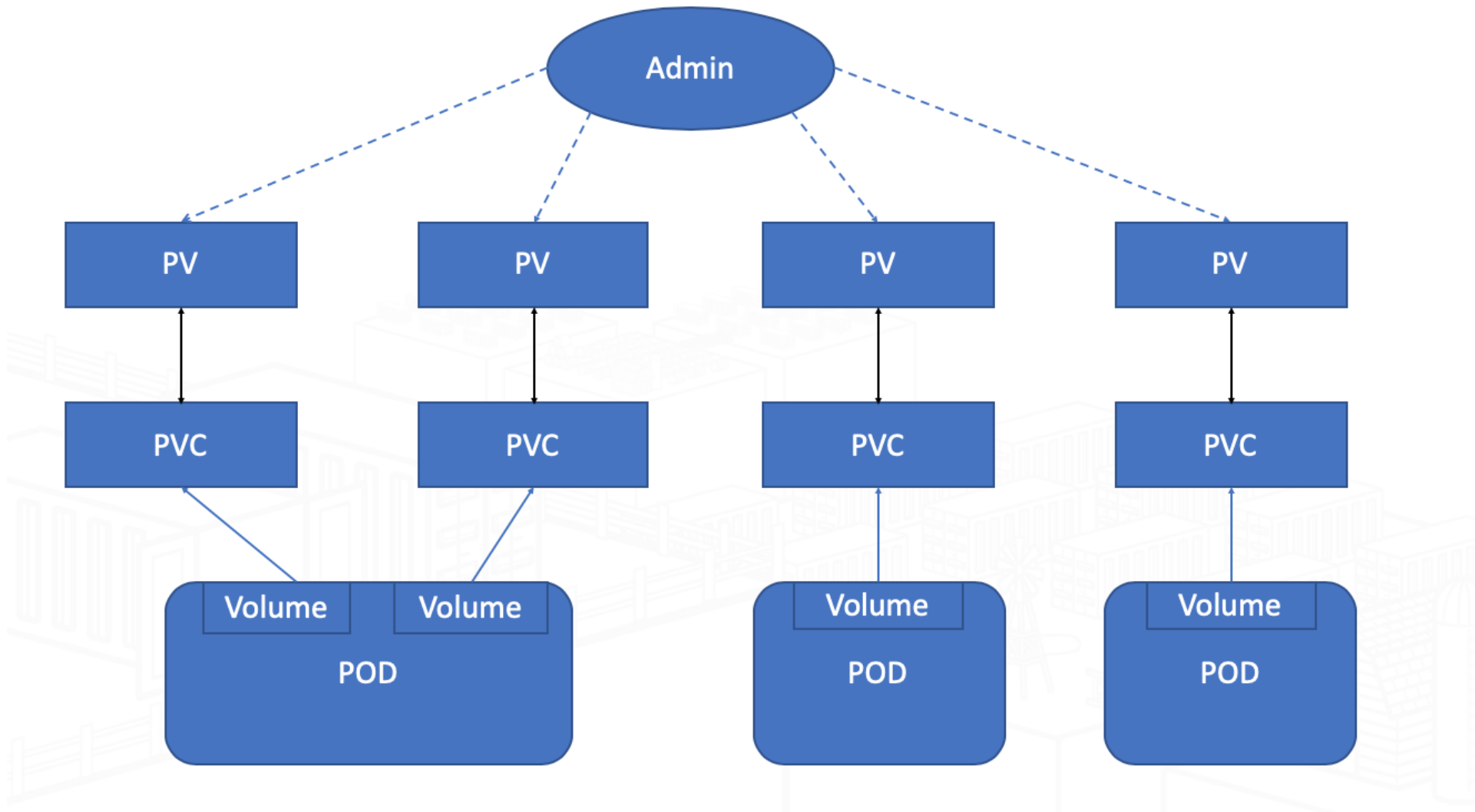
- Open source container manager used to run Kubernetes in production
- Easy-to-use interface for k8s configuration and deployment
- Infrastructure management across multiple clusters and clouds
- Automated deployment of the latest k8s release
- Workload, RBAC, policy, and project management
- 24x7 enterprise-grade support

Rancher 2.0

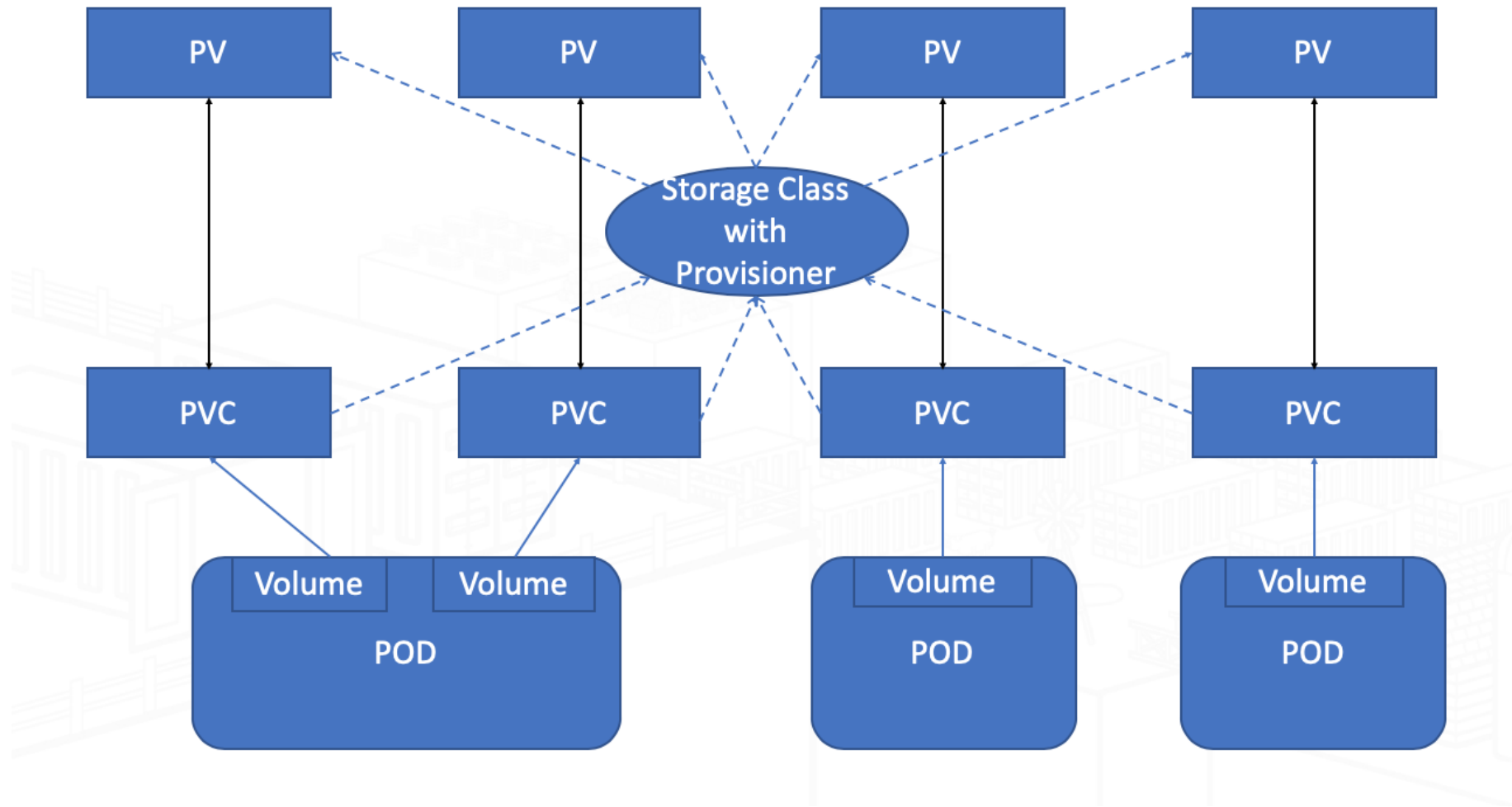
- Setting up (e.g RKE)
- Clusters
- AuthN & Security
- Storage
- Projects
- Namespaces
- Catalogs
- CLI/API/Kubectl



Persistent storage in Kubernetes before StorageClass



Persistent storage in Kubernetes after StorageClass



Read-Write-Once (RWO) vs Read-Write-Many (RWX)

- **Read-Write-Once** type storage only can be read/write on one node at any given time
 - High performance block device
 - AWS EBS, Azure Disk, Google Persistent Disk, Ceph RBD, Longhorn
 - Each Pod in one **StatefulSet** can have one volume
- **Read-Write-Many** type storage can be read/write on multiple nodes at the same time
 - Distributed Filesystem
 - AWS EFS, NFS, GlusterFS, CephFS
 - Pods in one **Deployment** share the same volume



Open Source
Distributed Block Storage Software
For Kubernetes

<https://github.com/rancher/longhorn/>

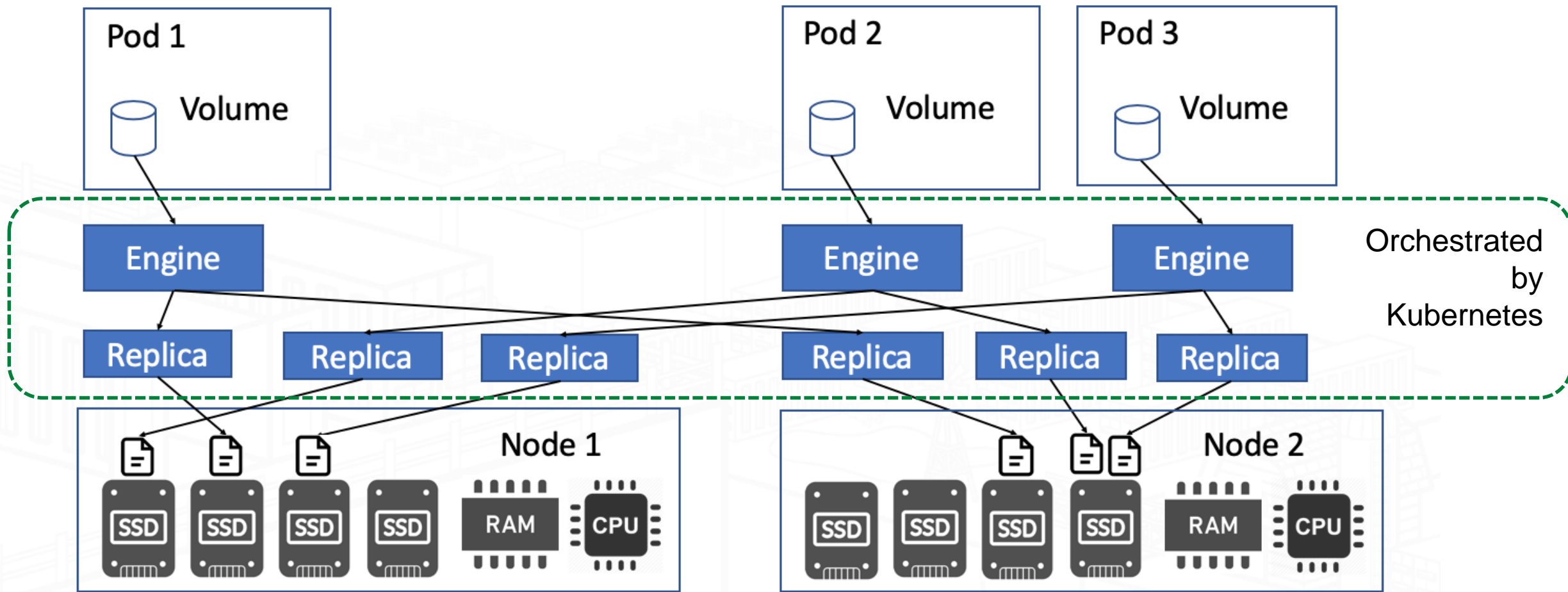
Add persistent storage support to any Kubernetes cluster

```
kubectl apply -f longhorn.yaml
```

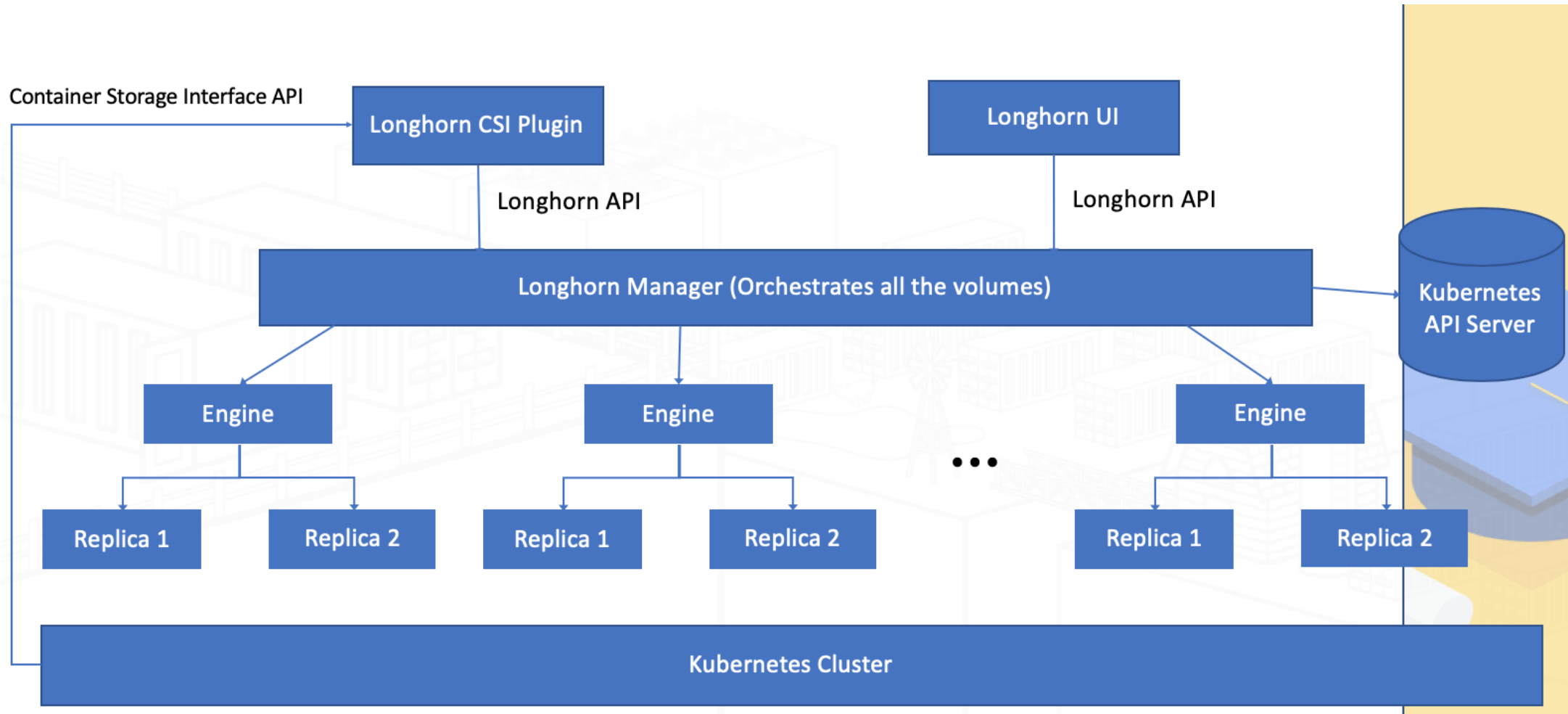
Latest release: Longhorn v0.5.0

- Enterprise-grade distributed block storage software for Kubernetes
- Volume snapshots
- Volume backup and restore
- Live upgrade of Longhorn software without impacting running volumes
- Cross-cluster disaster recovery volume with defined RTO and RPO
- Intuitive UI
- One click installation
- And more features are coming
 - QoS, volume resizing, real time performance monitoring, et cetera.

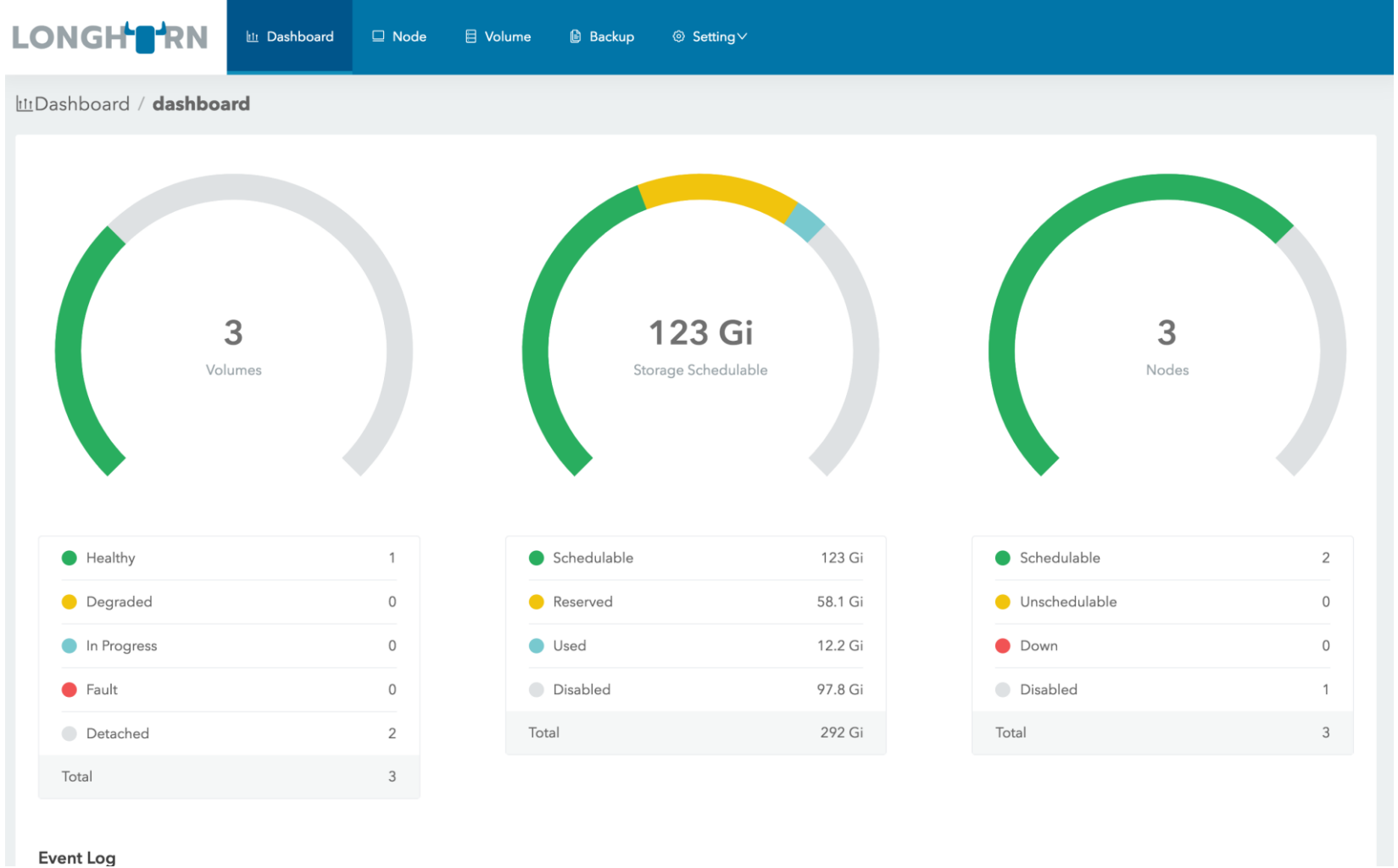
Longhorn Architecture - Engine

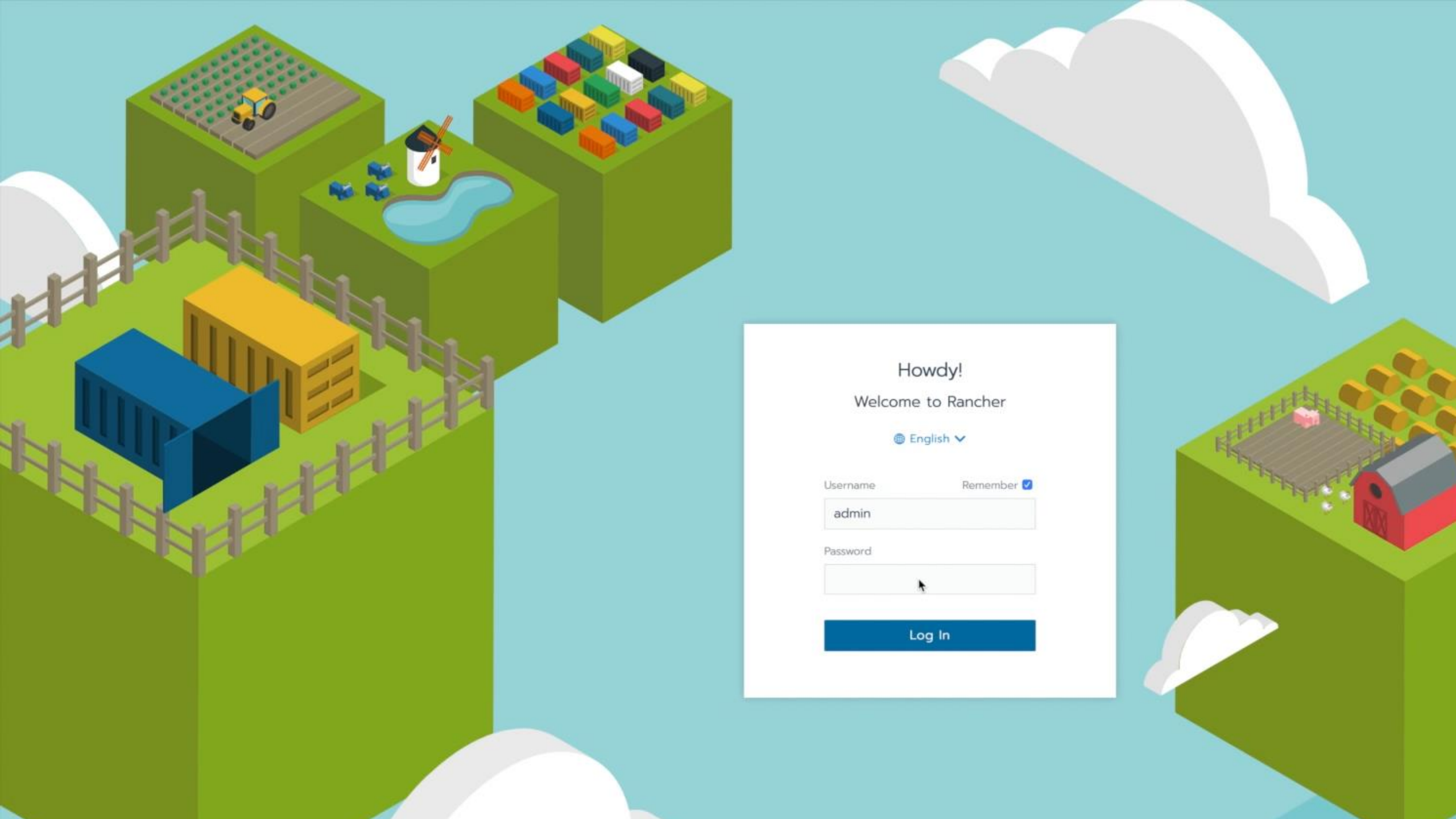


Longhorn Architecture - Manager



Longhorn - Demo





Howdy!

Welcome to Rancher

English

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admin

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Log In

Thanks for the attention!
Any questions?

