



Getting Started with Kubernetes and Rancher

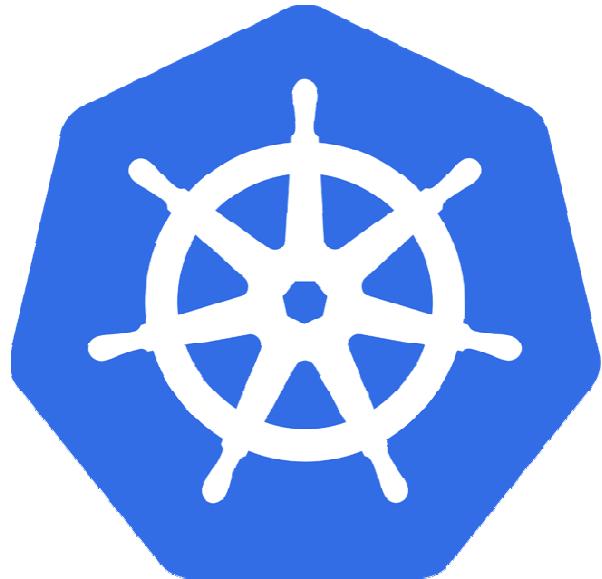
Rancher Labs Training

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#rancherk8s



Today's objectives



- Technical introduction to Kubernetes using Rancher
- Keep the slides to a minimum
- Demo, then demo some more
- Questions are always welcome
- We won't leave until all your questions are answered!
- Learning journey and Survey



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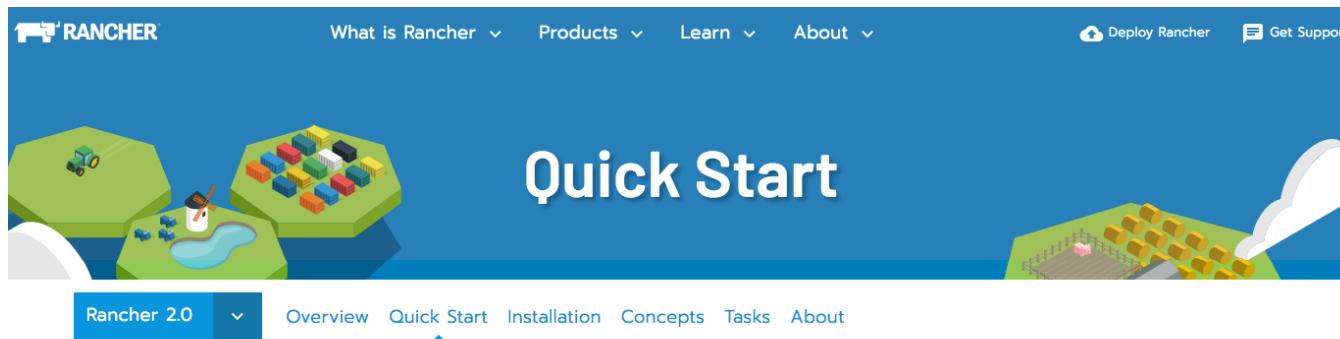
@jasonvanbrackel

Slack: adrian

For the purpose of this training, we're assuming you understand basic Docker concepts....

Resources - docs

<https://rancher.com/docs/rancher/v2.x/en/quick-start-guide/>



Quick Start Guide

Note:

This Quick Start Guide will get you up and running in a sandbox environment. It is not intended for a production environment. For more comprehensive instructions, see [Installation](#).

On this page

[Quick Start Guide](#)

Objectives

Provision A Linux Host

Begin Creation Of A Custom Cluster By Provisioning A Linux Host. Your Host Can Be:

Provision The Host According To The Requirements Below.

Upcoming Classes

Kubernetes + Vault



ALEXANDER-LEAVITT
SITE RELIABILITY ENGINEER AT
BOXBOAT

OCT 8, 2019 1:00 PM - 2:30 PM

[Register here](#)

Kubernetes Zero to Hero



AMIT BAR-OZ
SPOTINST SOLUTIONS ARCHITECT

OCT 22, 2019 1:00 PM - 2:30 PM

[Register here](#)

Data Security Strategies for Kubernetes



MICHAEL FERRANTI
PORTWORX VP OF PRODUCT
MARKETING



RYAN WALLNER
PORTWORX TECHNICAL ADVOCATE

NOV 12, 2019 1:00 PM - 2:30 PM

[Register here](#)

<http://rancher.com/kubernetes-master-class/>



#RancherK
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Resources – slack and forums

<http://slack.rancher.io>

The screenshot shows the Rancher Slack interface. On the left, a sidebar lists channels: All Threads, Channels (# general, # random), Direct Messages (slackbot, matthew), and Apps. The main area is the #general channel, which has 6,278 members. A message from GitHub (@rancher/rancher) asks about launching kubectl shell or connecting to a cluster using kubeconfig. Another message from GitHub (@rancher/rancher) provides steps to reproduce the issue. Below this, a message from Long (@rancher/rancher) asks if kubeconfig needs to be downloaded again after a node shutdown. A message from michal (@rancher/rancher) notes that it's an offspring of another issue. A message from GitHub (@rancher/rancher) suggests restarting the node where the external IP is located. At the bottom, there's a message input field.

<http://forums.rancher.com>

The screenshot shows the Rancher forums homepage. The top navigation bar includes a search icon, a menu icon, and a user icon. Below the navigation, there are tabs for all categories, Categories (selected), Latest, New (13), Unread, and Top. The main content area is divided into categories: Announcements, General, Beta Lounge, Rancher, RancherOS, and Longhorn. Each category has a brief description and a list of recent topics. For example, the 'Announcements' category is for new releases and updates, and the 'General' category is for topics that don't fit into other categories. The 'Beta Lounge' is a private area for beta program members. The 'Rancher' category is for discussions about the Rancher product. The 'RancherOS' category is for discussions about the RancherOS distribution. The 'Longhorn' category is for discussions about the Longhorn storage project. Each topic entry includes the poster's profile picture, their name, the topic title, and a 'new' badge if applicable.

Kubernetes 101

- ✓ Pods
- ✓ Deployments
- ✓ Services
- ✓ Config maps
- ✓ Ingresses

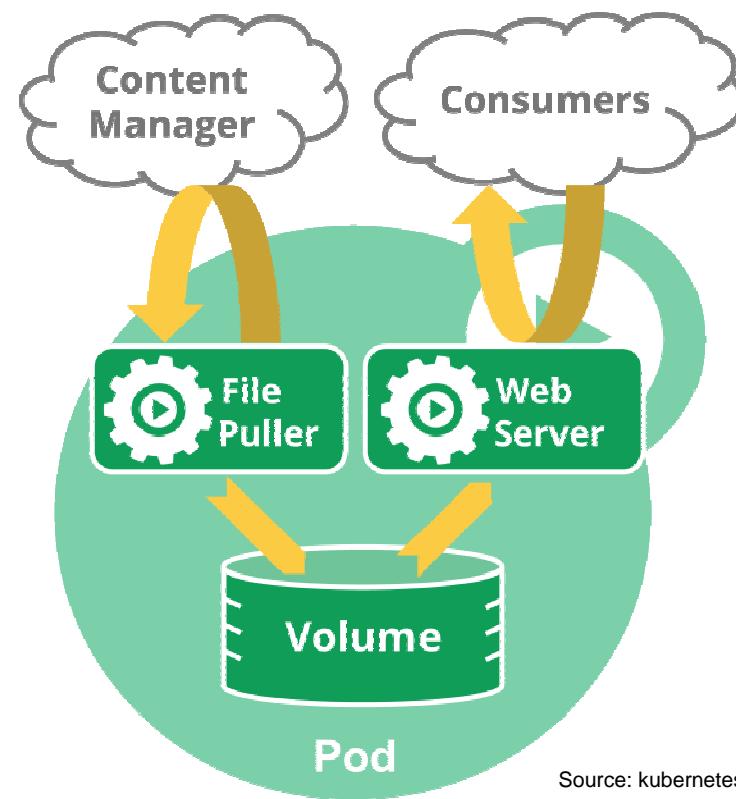
Pods

- Smallest unit that can be deployed in Kubernetes
- Consist of one or more containers that are always scheduled together
- Each pod is given a unique IP address
- Containers in a pod can speak to each other via localhost

Are Pods confusing?

- If your answer is “yes,” don’t worry too much
- Pods typically contain only a single container
- Try to think of pods as containers for the remainder of the training

Pods



Source: kubernetes.io

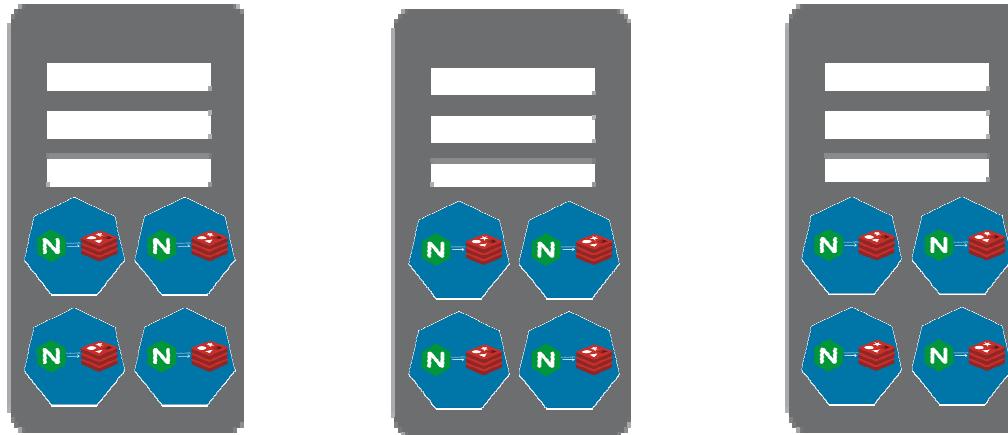
Basic Pod Spec

```
apiVersion: v1
kind: Pod
metadata:
  name: myapp-pod
  labels:
    app: myapp
spec:
  containers:
  - name: myapp-container
    image: busybox
    command: ['sh', '-c', 'echo Hello Kubernetes! && sleep 10']
```

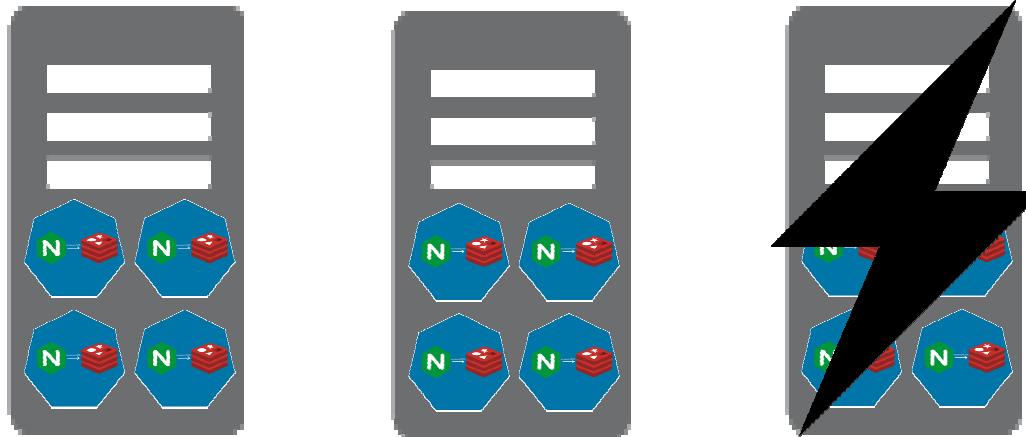
Replica Set

- Defines the desired scale and state of a group of pods

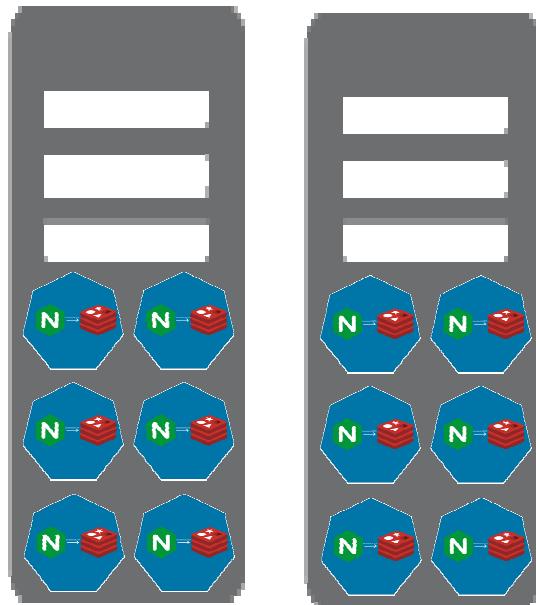
Replica Set



Replica Set



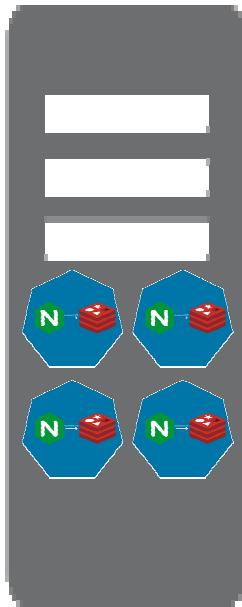
Replica Set



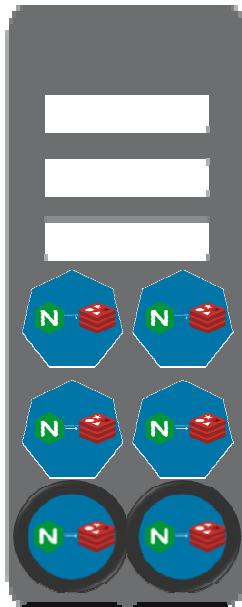
Deployments

- Level of abstraction above ReplicaSets
- Deployments create and update ReplicaSets
- Allow you to easily scale and perform rolling upgrades

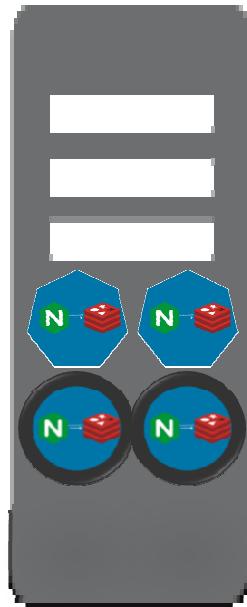
Deployments



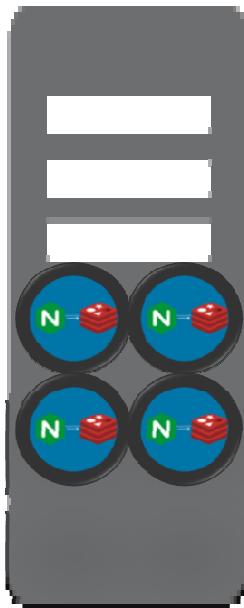
Deployments



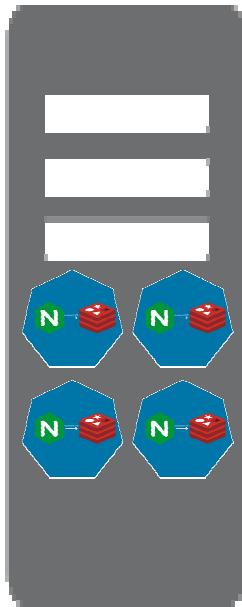
Deployments



Deployments



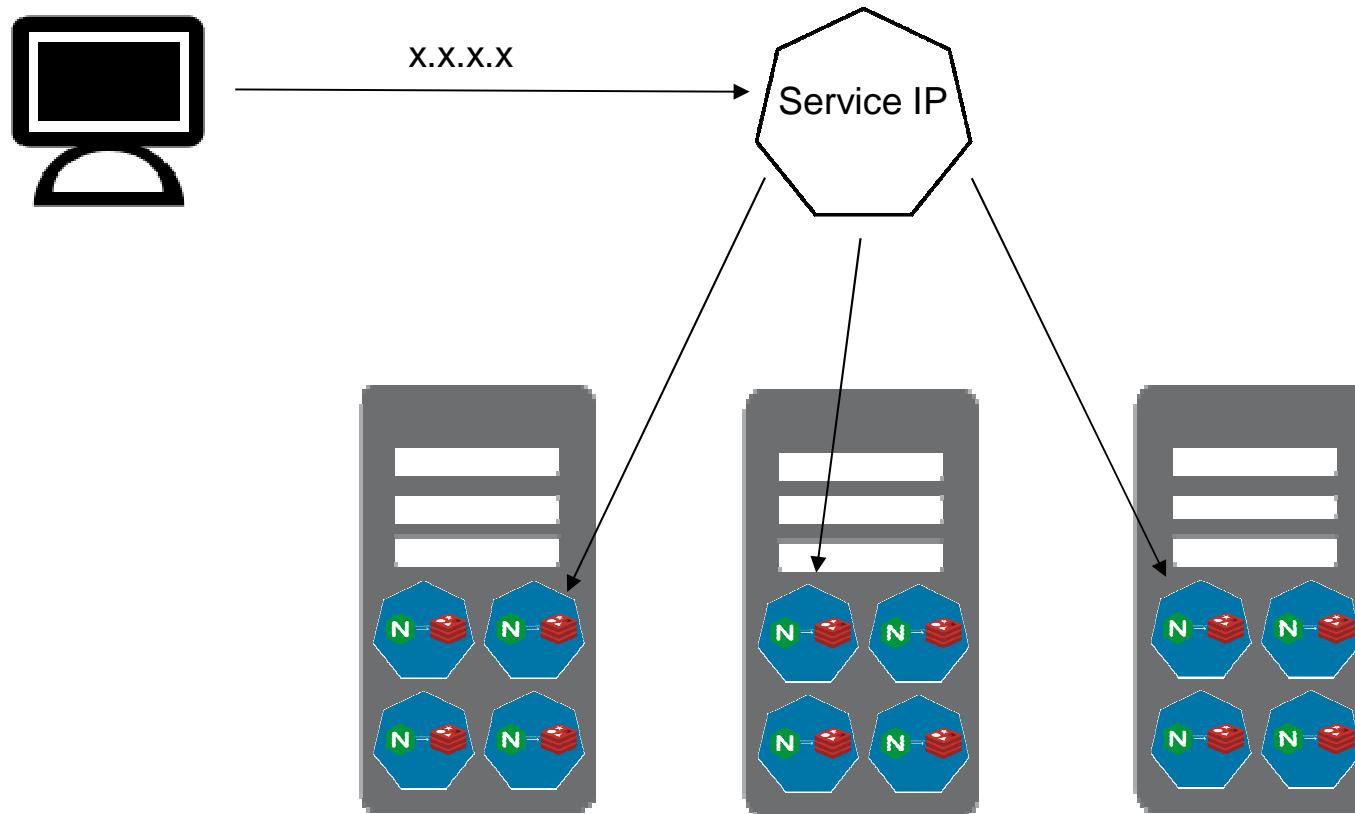
Deployments



Services

- Define a DNS entry that can be used to refer to a group of pods
- Provide a consistent endpoint for the group of pods
- Different types: nodePort, clusterIP, loadbalancer

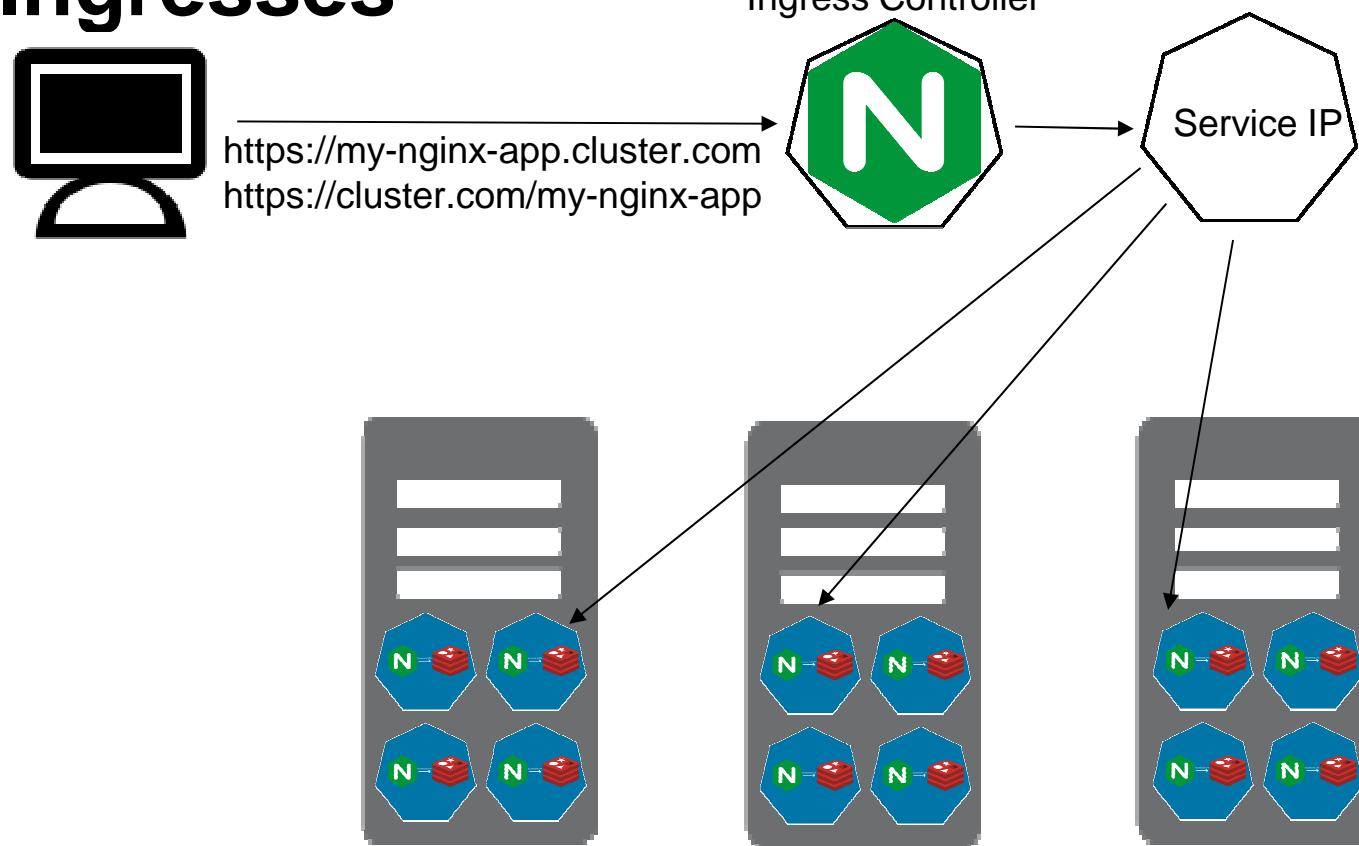
Services



Ingresses

- Define how traffic outside the cluster is routed to inside the cluster
- Used to expose Kubernetes services to the world
- Route traffic to internal services based on factors such as host and path
- Ingress is usually implemented by a load balancer (Nginx, HAProxy, etc...)

Ingresses

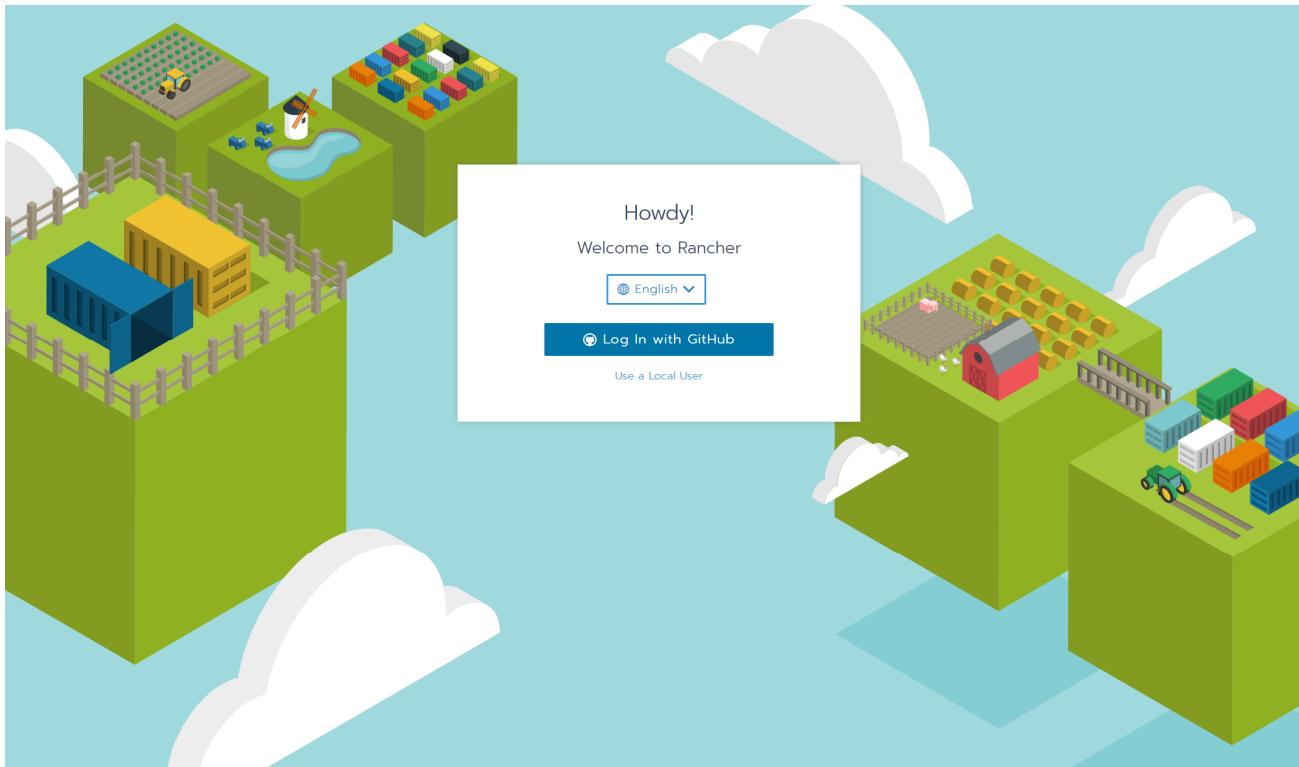


Operational Challenges

- With 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?

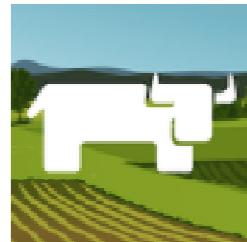


Rancher Time



Join other Rancher users in Slack

<https://slack.rancher.io>



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#Kubernetes channel

Thank you

rancher.com/Kubernetes-master-class
#rancherk8s

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