Pivotal Interface for Kubernetes

Vision Statement

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Product Name: kubernetes konekt   Team Name: The Goodfellas

Background

Kubernetes is a platform that is made to revolutionize the way that container based applications are released and tested. Kubernetes makes use of Docker containers that package and run an application along with all its dependencies in an isolated environment, eliminating errors experienced from running an application on different machines. Unlike a regular virtual machine, Docker containers do not need a guest operating system, making deployment lightweight.

Kubernetes builds on top of this by automating the deployment, scaling, and management of containerized applications within a cluster of computers. Through a master server, a cluster and its nodes can be managed, distributing containers among the nodes.

Problem Statement

The lack of connectivity between users with containers and users with clusters acts as a barrier for deployment. Currently there is not an interface that streamlines connecting these two groups.

Problem Outcome

The Minimum Viable Product (MVP) will be a Web UI that will connect users all over the world and allow them to distribute or recieve containers. We want users to have the available functionality to customize how they organize their software and control who they distribute it to. This will allow for better user experience and a more flexible application. The solution may expand into a mobile application, allowing users to schedule their containers on the go.

Milestones

- Begin Web UI and split team into frontend and backend.
  - Backend team:
    - Use Minikube to setup single node clusters for testing.
    - Implement skeleton to gather K8s access points.
    - Upload containers to servers.
    - Transmit and run containers on remote cluster.
  - Frontend team:
    - Simple logins for buyers and sellers.
    - Seperate profiles and tools for buyers and sellers.

Technologies for Design Solution

- Docker
- Pivotal Tools
  - Concourse CI
  - Pivotal Tracker
  - Pivotal Web Services
  - Pivotal Container Service
- Tracks of Work:
  - "Buyer" web flow
  - "Seller" web flow
  - K8S Cluster
- Tech stack
  - Web Stack
    - Java
    - Spring Core / MVC / Security
    - Hibernate ORM / Validator
    - MySQL
  - Cluster Stack
    - Minikube
    - PKS
    - GCP / GKE