Building Clustered Applications with Kubernetes and Docker

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Why Docker?
Why Kubernetes?
Kubernetes Architectural Overview

- **Kubernetes Cluster**
  - Kubernetes Master Server(s)
    - etcd
    - API Server
    - Scheduler
    - Controller Manager
  - Linux Server(s)
    - Kubernetes Node
      - Docker
      - Kubelet
      - Kubernetes Proxy
    - Kubernetes Node
      - Docker
      - Kubelet
      - Kubernetes Proxy
    - Kubernetes Node
      - Docker
      - Kubelet
      - Kubernetes Proxy
Installing Kubernetes

- Hosted Services: Google Compute Engine
- Support for a wide variety of Infrastructure (Azure, Rackspace, vSphere, AWS)
- Support for several OS’ (RHEL, CentOS, Fedora, Debian, Ubuntu, Atomic, CoreOS)
- Local but automated (Vagrant/Ansible) * Magic *
- Local but manual (Fedora) * What I use *

Awesome! Now, let's build an application
We’ll start by Defining and Deploying a Pod
You might also want to add a ReplicationController.
And add a Service to Proxy in front of it
What about Persistence? Let's try out Volumes

Volumes are specified in a Pod and mounted onto a specified path within a container. There are several kinds of Volumes:

- **hostPath** (mount a persistent directory provided by host)
- **NFS** (mount NFS share provided by a 3rd Party)

**Ephemeral**
- **emptyDir** (mount an ephemeral directory provided by host)

**File**
- **GlusterFS Distributed File System** (mount an adjacent GlusterFS volume)
- **Ceph Distributed File System** (mount an adjacent CephFS volume)

**Block**
- **GCEPersistentDisk** (mount a GCE Block Device when in GCE)
- **Ceph Block** (mount an adjacent Ceph Block Device)
- **ISCSI Block Devices** (mount an adjacent ISCSI Block Device)
For this example, we’re going to use GlusterFS
Debugging FAQ

Tips that may help you debug why Kubernetes isn't working.

Of course, also take a look at the documentation, especially the getting-started guides.

When asking for help, please indicate your hosting platform (GCE, Vagrant, physical machines, etc.), OS distribution (Debian, CoreOS, Fedora, etc.), and special networking setup (Flannel, OVS, etc.).

Checking logs

- Of your pod:
  
  `cluster/kubectl.sh log <podname> [<containernname>]`
Thanks for Attending

Interested in following up?

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Examples:

https://github.com/wattsteve/kubernetes/