glideinWMS in the Cloud

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What is the Cloud?

And why do we care?

- The word "cloud" is ~~probably~~ one of the most overused words to describe technology
- It is more useful as a marketing buzzword than an actual descriptor of technology
- To carry on a useful discussion we need to define exactly what we mean when we say, "Cloud"
- Some more "cloud" buzzwords to consider:
  - Iaas, PaaS, SaaS
  - Public, Private, Hybrid, Community Clouds

Define Cloud

- SaaS – Service as a Service
  - Examples – Google Apps, Parts of Microsoft Azure

- PaaS – Platform as a Service
  - Examples – OpenShift, Google AppServer, parts of Microsoft Azure

- **IaaS – Infrastructure as a Service**
  - Examples – Amazon EC2, FermiCloud, Nebraska's OpenStack install

See: http://en.wikipedia.org/wiki/Cloud_Computing for a high level explanation

Define Cloud (cont.)

- Public Clouds - Service providers offer one of the cloud technologies to the general public

- Private Clouds – Operated for the use of a single organization

- Hybrid Clouds – A mixture of public and private clouds

- Community Clouds – Analogous to the Grid

See: http://en.wikipedia.org/wiki/Cloud_Computing for a high level explanation

glideinWMS – What "Cloud" does it use?

- So now we have a bunch of definitions, but what does glideinWMS actually use?
  - glideinWMS uses the Infrastructure as a Service (IaaS) model
  - glideinWMS uses Condor's ec2 universe
  - glideinWMS doesn't really care whether the IaaS cloud is public, private, or hybrid.

So Why Use the Cloud?

- Get to pick the OS and system libs
  - Don't have to ask for specific versions to be installed on grid site worker nodes
- Can't get enough time on the Grid (deadline looming)
  - Get guaranteed resources in the cloud
  - Amazon will be happy to take your money
- You can have privileged user access to the VM

glideinWMS
(review of basic principles)

- glideinWMS uses Condor for all "Heavy Lifting"
  - If Condor can't, glideinWMS can't
- glideinWMS Factory creates glideins based on demand
- glideins running on resources create a condor pool of dynamic size to run user jobs
- User sees a "private" condor pool available to run their jobs

glideinWMS: Grid vs. Cloud
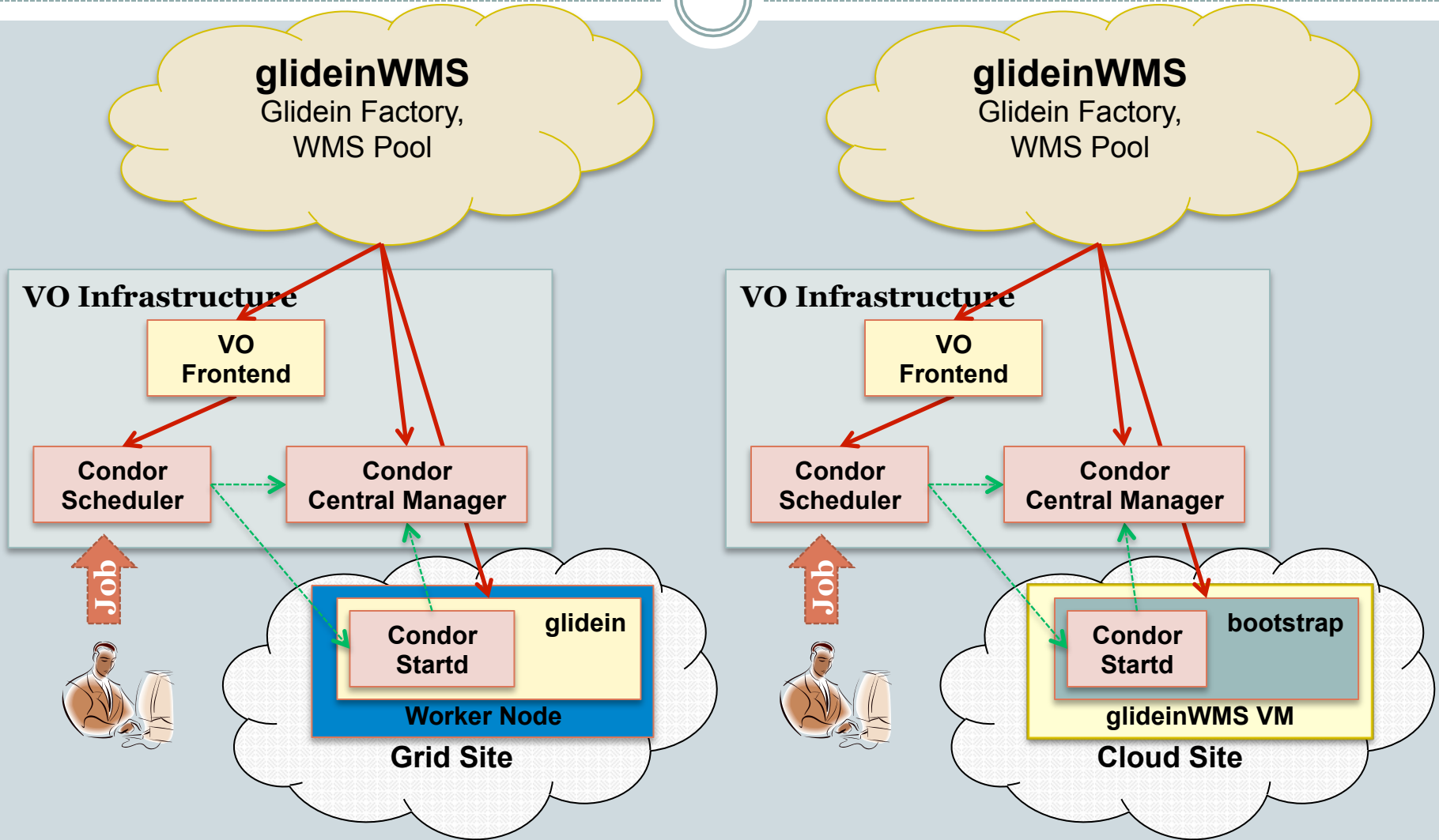
Cloud Image Challenges

- Who "owns" image?
  - Who creates it?
  - Who patches it?
  - Who gets called when something goes wrong?
- Where does the image reside?
  - It must be pre-staged to the cloud infrastructure
  - Under which account is the image stored?
- How do you create the image?
  - What tools do you use to create and deploy the image?
  - How do you keep track of the image? (Image Catalog)

Cloud Image Challenges (cont.)

- What "extra" resources does the cloud provide?
  - How much memory is allowed?
  - How much "instance storage" is given?
    - This is a real issue for CMS
- How do you debug problems with your image?
  - With out knowing an admin for the cloud, or having a working example image, it can be frustrating to build a working image

Demo & Questions

- Demo
- Questions?