About Me

• Chief Architect at Cloudkick
• Developer on Apache HTTP Server
• Former VP Infrastructure @ ASF
• Libcloud developer!
About the Cloud
About the Cloud

• Awesome.
About the Cloud

• Awesome.
• Really.
About the Cloud

• Awesome.
• Really.
• Maybe not always.
About the Cloud

- Awesome.
- Really.
- Maybe not always.
- But mostly.
Compute

• Amazon EC2
• Rackspace Cloud
• Linode
• GoGrid
• Voxel
• And many more!
I want a server.
I want a server right now.
Enter Libcloud

from libcloud.types import Provider
from libcloud.providers import get_driver
rs = get_driver(Provider.RACKSPACE)('rackspace-apikey')
rs.create_node('serverA')
About Libcloud

- Started in the summer of 2009
- Easy to use.
- Portable.
- Pure Python
  - Java version also underway
Why?

• API Styles:
  • Amazon: XML + Custom HMAC Auth
  • Rackspace: JSON + Auth Tickets
  • SoftLayer: XML RPC + User / Password
16 Providers
Libcloud APIs

• Originally 6 Core APIs
  • List Nodes
  • List Images
  • List Sizes
  • Create / Destroy / Reboot Node
list_nodes

foo = d.list_nodes()
for node in foo:
    print node.id
    print node.public_ip
Extended APIs

• Providers inconsistent about services.

• Have a “ex_” prefix, documented per-driver.

• Amazon Security Groups:
  • amz.create_node('foo',
                   ex_securitygroup='groupA')
Getting Started

• `easy_install apache-libcloud`
Get your Provider Info

• Amazon:

• Rackspace:
  • https://manage.rackspacecloud.com/APIAccess.do
from libcloud.types import Provider
from libcloud.providers import get_driver

d = get_driver(Provider.RACKSPACE)("xxxxxxx")

nodes = d.list_nodes()
for node in nodes:
    print "id: %s  name: %s  public_ips: %s" %
        (node.id, node.name, node.public_ip)
Tricks!

- Included data:
  - Location
  - Price-per-hour in USD
  - Cheapest 4 gigabyte node outside the US
Cheapest 4 gig node outside the US

```python
possible = []
for d in drivers:
    loc = filter(lambda x: x.country != 'US',
                 d.list_locations())
    for l in loc:
        sizes = filter(lambda x: x.ram >= 4096, d.list_sizes(l))
        for s in sizes:
            possible.append({'size': s,
                             'location': l,
                             'driver': d})

best = sorted(possible, lambda x,y:
               x['size'].price < y['size'].price)[0]
print best
```
One more thing!

- deploy_node
  - Calls create_node
  - Consistent initial bootstrapping of machines.
- SSH Keys
- Configuration Management
Installing Puppet

skey = SSHKeyDeployment(key)
sd = ScriptDeployment("apt-get install -y puppet")
msd = MultiStepDeployment([[skey, sd]])
node = d.deploy_node(name="lc-test", deploy=msd)
Running commands

- Fabric
- http://www.fabfile.org/
Integrating with Fabric

```python
env.hosts = [x.public_ip[0] for x in d.list_nodes()]

def hostname():
    run('hostname')
```
$ fab hostname
[173.45.245.33] run: hostname
[173.45.245.33] out: lctest3.k1k.me
[173.45.245.32] run: hostname
[173.45.245.32] out: lctest2.k1k.me

Done.
Disconnecting from 173.45.245.33... done.
Disconnecting from 173.45.245.32... done.
Up next for Libcloud?
Higher Level Apps

- Silver Lining: Python Deployment on the Cloud
  - http://cloudsilverlining.org/

- Pantheon Mercury: Drupal Deployment on the Cloud
  - http://getpantheon.com/
Applications; Not just VMs

• Cast:
  • http://github.com/cloudkick/cast

• Galaxy:
  • http://github.com/ning/galaxy
Related Projects

• JClouds
• Java
• Apache Deltacloud
• Ruby, little different ideas
Questions?

• Apache Libcloud:

http://libcloud.org/

#libcloud on Freenode IRC

• Slides online:

http://paul.querna.org/slides