SC12

Salt Lake City, Utah

Conference Dates:
November 10-16, 2012

Exhibition Dates:
November 12-15, 2012

IEEE computer society

Association for Computing Machinery

Infrastructure Clouds and Elastic Services for Science

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Request a FutureGrid Account

- Follow the instructions at:
  - http://www.nimbusproject.org/docs/sc12/
- Fill out the form and submit
  - Use the sign up code: 011010
  - Once submitted instructions in email will follow

Meet the Presenters

Dr. Kate Keahey
Argonne National Lab
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Patrick Armstrong
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Dr. Pierre Riteau
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Tutorial Goals

- Introduce infrastructure cloud computing
- Get attendees to successfully use a real production cloud
- Present the current state of the Cloud
  - Software, providers, tools, APIs, environments, limitations, possibilities
- Explain elasticity
  - How can science use it?
- Present patterns scientific applications can use to harness the cloud

Tutorial Outline

http://www.nimbusproject.org/docs/sc12/outline.html

- 8:30 Preface
- 9:00 Introduction to Clouds and Science
- 9:45 Using Amazon's EC2
- 10:00 Break
- 10:30 Get on the Cloud (hands on)
- Noon Lunch
- 1:30 Infrastructure Cloud Offerings
- 2:00 Cloud Management Tools
- 3:00 Break
- 3:30 Cloud Applications
- 4:30 Cloud Challenges

Introducing Nimbus

High-quality, extensible, customizable,
open source implementation

Nimbus Infrastructure Platform

Context Broker | cloudinit.d | Elastic Scaling Tools

Enable users to use IaaS clouds

Nimbus Infrastructure

Workspace Service | Cumulus

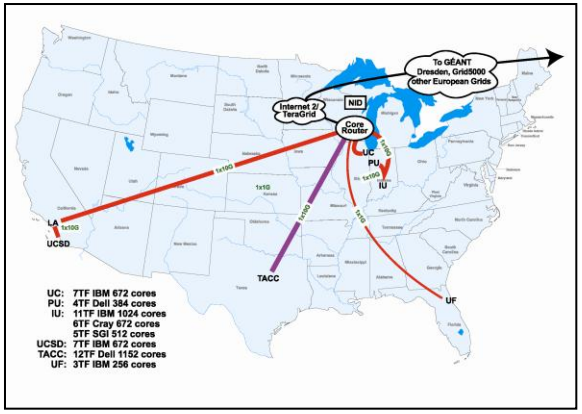
Enable providers to build IaaS clouds

Enable developers to extend, experiment and customize

openstack™ | amazon web services™ | Eucalyptus

FutureGrid

- Test bed for computer science research
  - Robust simulation environment
  - HPC, Grid, and Cloud Computing
  - Security, distributed networks, virtualization, etc
- Several different types of IaaS clouds
  - Nimbus
  - Eucalyptus
  - OpenStack



Nimbus Clouds

Nimbus on FutureGrid

- **Hotel** (University of Chicago) -- Xen
  41 nodes, 328 cores
- **Foxtrot** (University of Florida) -- Xen
  26 nodes, 208 cores
- **Sierra** (SDSC) -- Xen
  18 nodes, 144 cores
- **Alamo** (TACC) -- KVM
  15 nodes, 120 cores

Using Nimbus Clouds

- AWS Interfaces 

  - Protocol compliant with EC2 and S3
  - Many libraries and clients can be used
- Cloud-client
  - Easy to user command line client for Nimbus
  - Remote access to any nimbus cloud
  - X509 security

Access Levels

- Portal Account
  - Access to the web portal
- Project Membership
  - All use of resources must be in the context of a project
- Cloud Accounts
  - All the Nimbus cloud accounts are synchronized

ssh Access

- ssh access to hotel.futuregrid.org comes with a FutureGrid Nimbus account
- It is ***only*** needed to acquire the Nimbus credentials
  - However, it also provides a well configured environment and tool set.
- Nimbus Clouds can be controlled from any place with a IP address

Join The SC 2012 Tutorial

- Log into www.futuregrid.org
- Go to: https://portal.futuregrid.org/projects
- Find project 265: **"SC12 Tutorial"**
  - Click "Join"

Add ssh keys

- Navigate to the ssh key entry page
- Add your public key