



SC12
Salt Lake City, Utah

Conference Dates:
November 10-16, 2012

Exhibition Dates:
November 12-15, 2012



Association for
Computing Machinery

Infrastructure Clouds and Elastic Services for Science

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University of Chicago
University of Colorado





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
University of Chicago



Patrick Armstrong
University of Chicago



Dr. Pierre Riteau
University of Chicago



John Bresnahan
Argonne National Lab

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

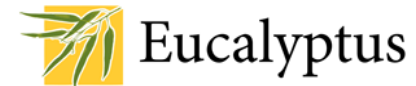
Nimbus Infrastructure

Workspace
Service

Cumulus

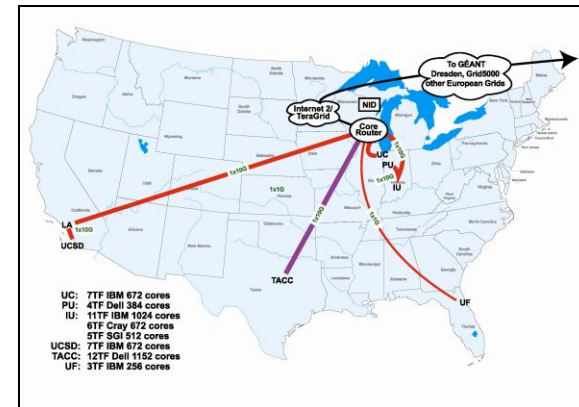
Enable providers to build IaaS clouds

*Enable developers to extend,
experiment and customize*



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

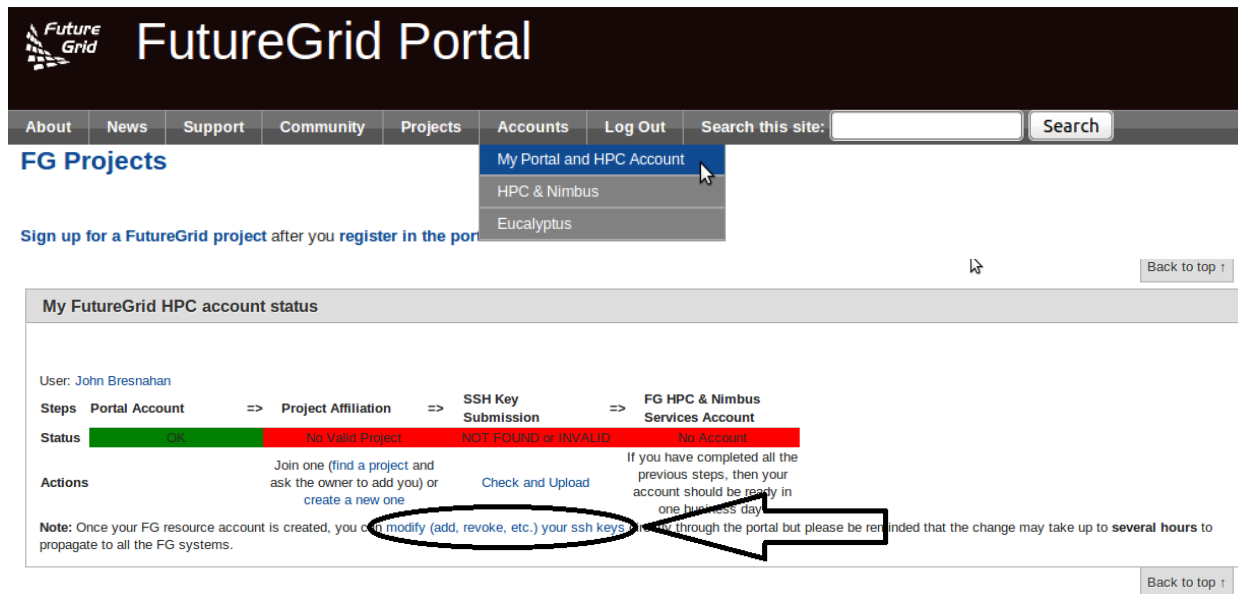
- ssh access to hotel.futuregrid.org comes with a FutureGrid Nimbus account
- It is ***only*** needed to acquire the Nimbus credentials
 - However, it also provides a well configured environment and tool set.
- Nimbus Clouds can be controlled from any place with a IP address

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



FutureGrid Portal

About News Support Community Projects Accounts Log Out Search this site: Search

FG Projects

My Portal and HPC Account
HPC & Nimbus
Eucalyptus

Sign up for a FutureGrid project after you register in the portal

My FutureGrid HPC account status

User: John Bresnahan

Steps	Portal Account	Project Affiliation	SSH Key Submission	FG HPC & Nimbus Services Account
Status	Completed	No Valid Project	NOT FOUND or INVALID	No Account
Actions		Join one (find a project and ask the owner to add you) or create a new one	Check and Upload	If you have completed all the previous steps, then your account should be ready in one business day

Note: Once your FG resource account is created, you can modify (add, revoke, etc.) your ssh keys through the portal but please be reminded that the change may take up to several hours to propagate to all the FG systems.