EUBrazilCC federated e-infrastructure

Francisco Brasileiro
UFCG, Brazil

www.eubrazilcloudconnect.eu
EUBrazilCC federated infrastructure

How to federate ... existing heterogeneous resources ... that expose different abstractions ... and use different s/w stacks ... preserving autonomy as much as possible?

VM-driven interaction
- Standard private clouds using dedicated servers
- Opportunistic private clouds using shared desktops

Job-driven interaction
- CPU HPC clusters
- Hybrid HPC clusters

Unified security model
Security model

The two main principles that have driven our security model definition were:

- Preservation of individual provider’s autonomy
- Simplicity

Our model in a nutshell

- VOMS at the federation level
  - For both users and among fogbow managers
- Native mechanism of each federated resource
- Mapping of the federation user to a special local user at each federated resource
  - Transparently provided by the federation middleware
  - All requests are logged for auditing and accounting

Compatible with the **EGI Federated Cloud**

- Less intrusive on the local policies used by the various providers
VM-driven interaction

Compliant with established standards and services
FOGBOW manager’s architecture

- **Computing**
  - OpenStack
  - OpenNebula

- **Storage**
  - Automatic download of images from a marketplace (ex. EGI appDB)

- **Identity**
  - VOMS
  - X.509
  - Keystone
  - ONE
Opportunistic private clouds

- Functional implementation supporting desktops running Windows and Linux
- Requires OpenStack as cloud middleware
- Uses PowerNap to define when a desktop is deemed to be available to the cloud
  - OpenStack Nova computing service is started/stopped whenever the desktop is available/unavailable
Job-driven federation

- Uses CSGrid middleware
  - Provides services for resource management and job submission and control
  - Provides a DRMAA interface for the submission of jobs in any computing resource belonging to the federation
  - Adapted to support our common security model
  - Integrated with fogbow to support on-demand instantiation of VMs for the execution of jobs
Current deployment

_private cloud federation_

LNCC’s private cloud (openstack) eubrazilcc.comcdis.lncc.br

UFCG’s private cloud (servers + openstack) servers.lsd.ufcg.edu.br

UFCG’s private cloud (desktops + openstack) desktops.lsd.ufcg.edu.br

BSC’s private cloud (opennebula) fogbow-manager.bsc.es

CMCC’s private cloud (opennebula) fogbow01.cmcc.it

UPV’s private cloud (opennebula) manager.i3m.upv.es

VOMS (UPV)
Thank you! Obrigado!

Get ready for our applications!

Develop with our platform!

Federate with our middleware!

www.eubrazilcloudconnect.eu