Cloud Usage for Workloads in High Energy Physics

Utilizing Distributed Clouds for Compute and Storage

on behalf of the
High Energy Physics Research Computing Group
at
University of Victoria, BC
Marcus Ebert, mebert@uvic.ca

http://heprc.phys.uvic.ca
https://heprc.blogspot.com
Distributed Cloud Compute
Cloudscheduler

(Starts/terminates VMs as needed)

University cluster

Other Universities

Public Clouds

HTCondor

User

Image distribution between clouds: Glint

https://indico.cern.ch/event/637013/contributions/2739289
Distributed Cloud Storage
**Problem:**
Traditional storage systems are not flexible enough!
Unified namespace across all storage endpoints

User

Storage Cloud

UVic Job Scheduler

European data center

East coast data center

West coast data center

American west coast Cloud

American east coast cloud

European Cloud
User

Storage Cloud
DYNAFED

Any storage close to the job

Job scheduler
CloudScheduler

Any cloud in the world

https://indico.cern.ch/event/637013/contributions/2739286
Resources
Resources

- ~10 different clouds currently integrated
  - mostly Openstack, but also others
  - Northern America, Europe

- ~50TB Object storage
  - not all clouds with own storage

- about ~5000 vcores used all the time

- integrating a new cloud: only Openstack username/password needed
  - fully integrated in our system within minutes
    - if no firewall on Openstack side prevents external access
Resources - Anyone with spare capacity?

- unused capacity for compute or storage
  - temporary or opportunistic
  - in any country
- short term or long term
- small or large allocation
- compute and/or storage
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All resources are greatly appreciated.

Thank you!