WORKSHOP:
Using Emu Cluster in the Cloud

Paul Coddington, Deputy Director eRSA

9 March 2016

Emu User Guides

- Emu web page
  https://www.ersa.edu.au/service/cloud/clusters-in-the-cloud
- Emu User Guide
  http://support.ersa.edu.au/hpc/emu-guide.html
- eRSA User Guides
  http://support.ersa.edu.au/
- HPC training tutorial
  eRSA User Guides -> HPC -> HPC Quick Start
  Unix tutorial and Unix cheat sheet
  eRSA User Guides -> HPC -> Torque PBS queuing system

Emu Cluster in the Cloud

- Emu is an eRSA cluster that runs in the NeCTAR national research cloud
- Aimed to be like Corvus (decommissioned 2013)
  - 8-core compute nodes, used just like Corvus
- But a bit different
  - Dynamically created VMs in the cloud
  - More memory per node (32GB)
  - Can have 16-core VMs if you really need it
  - Can have private compute nodes
  - Aimed at fairly small, single-node jobs

Using Emu

- Looks to user like a standard HPC cluster
- Accessible to anyone with an eRSA account
- But worker nodes are cloud VMs
- Emu is a *dynamic* cluster – compute nodes are added and removed based on work load
  - Between a max and min size
- Almost the same as using Tizard HPC
  - Same eRSA account, home directory, software applications, Torque queueing system, job submission, wall time limit, file transfer (sftp), etc
- Log in via ssh to `emu.ersa.edu.au`

Limitations of Emu

- A good additional compute resource, but some limitations
- Only for small jobs, high-throughput computing
  - Single node jobs
  - No more than 8 cores
  - No more than 4GB memory per core
- Not as fast for file I/O as Tizard
  - Small /tmp space
  - slower /scratch and /home
- Smaller number of total cores than Tizard

Private compute nodes

- By default Emu is a shared resource like Tizard
- But can use your own NeCTAR cloud resource allocation to have private compute nodes
  - Like your own private sub-cluster!
  - No job wall-time limit!
- Log in to the NeCTAR web dashboard
- Apply for a project allocation
  - Ask the eRSA heldesk if you need assistance
- Once it is approved, email the eRSA helpdesk to say you want to use it with Emu

Using your private cluster

- Tell eRSA helpdesk
  - the short name of your Nectar project allocation
  - which researchers can use your private nodes
  - what size worker nodes you would like
- eRSA will set it up for you and tell you when it's ready
- Add one line to your Torque job submission script for Emu to specify the name of your private group

```
#PBS -A myprojectname
```

- Now you have your own private sub-cluster on Emu!
  - Jobs will also go to the shared cluster if it has free worker nodes and yours doesn't

Upcoming workshops

Running a Virtual Machine in the cloud
14 April, University of Adelaide

R-Studio in the Cloud
15 April, University of Adelaide

Talk to us after the workshop to register

eRSA

Advancing Research Innovation