Mini Parallab workshop

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Fimm - Linux Cluster at Parallab

- 130 nodes with 2,4 or 8 CPUs and with 2-8 Gb RAM each and significant storage
- Contacts: Thomas Burgess, Boris Wagner, Saerda Halifu
- ssh login portal: `fimm.bccs.uib.no`
- More information available here
  - http://www.parallab.uib.no/resources/cluster

Getting an Account

- Fill out the form
- http://www.parallab.uib.no/projects/super/account
- Once application has been approved phone Boris or Saerda to obtain password
- Login to fimm as soon as you can and remember the

* Form filling hints:
  * Type of research: Physics :-)
  * NOTUR - skip
  * UiB informatics account - put in your UiB account name here
  * Cluster: IBM e1350
  * Memory/CPU: 2-4 Gb
  * Home disk space: 5-10 Gb
  * CPUs: 1
  * Description:

```
- Title: ATLAS
- Research: Elementary particle physics
  with the ATLAS
- Packages: Gnu C/C++ compiler, ROOT,
  ATLAS runtime environment
- BCCS Contact: Boris Wagner
- Note: Add me a as user of /work/atlas
  and /migrate/atlas directories
- Preferred username: _____
```

File system at Fimm

- `/home/username` - your home directory, limited but backed up storage
- `/work/username` - large storage, no backup, use for job in- and output data
- `/work/atlas /work2/atlas` - Shared directories, used for ATLAS software, and common data sets
- `/scratch` - temporary directory for use in jobs
- `/migrate/username` - secure tape backup storage, slow access, store large tar files only

Atlas work directory

- `/work/atlas`
- When you store something here:
  - Keep it tidy - only store what you need to share
  - Describe it in `/work/atlas/readme.txt` (also in `user/` and `data/`)
  - Make it accessible for others `chmod -R ug+rw`

- Subdirectories
  - `data/` - ATLAS data sets.
  - `user/username/` - Share personal data here
  - `install_scripts/` - Scripts that installs or setups additional software.
  - `software/` - Installed software
  - `sourcecode/` - ATHENA source code packages, marked with release tag
  - `examples/` - Example jobs to get you started running on the cluster

How to Submit Jobs

- Fimm is running PBS - portable batch system
- A job is implemented in a PBS script
- To submit a job use `qsub script.pbs` - which returns a jobid
- To status of jobs in the queue use `qstat`
  - Some status codes: **`E`** exiting, **`Q`** queued, **`R`** running
  - More stats for one job: `qstat -f jobid`
  - All your jobs `qstat -au username`
- To delete a job use `qdel jobid`

Running Jobs

- Write job script
- Submit job with `qsub script.pbs`
- Watch job with `qstat jobid`
  - Note: job unknown once completed
- Check results

```
Very simple test script
Put PBS commands in the header

#!/bin/bash
#PBS -S /bin/bash
#PBS -N myTestJob
#PBS -l ncpus=1,walltime=00:10:00,mem=1800mb
#PBS -M user_name@mail_server
#PBS -m abe
#PBS -o myTestJob.out
#PBS -e myTestJob.err

Then add the commands that the job should do

echo “Hello world! from myTestJob”
echo “Hello error! from myTestJob” 1>&2
```

Using root in Jobs

- Root is installed under `/work/atlas/software` to use it do `source /work/install_scripts/setup_root_v5.22.00.sh`
- Run root with batch job switches: `root -l -q -b job.C`
- Now make a pbs script to execute this code & scp the histogram home to verify that you made a plot...

```
#include "TH1F.h"
#include "TCanvas.h"
void job() {
    TCanvas canvas;
    TH1F h("simple test","simple gaussian histogram",100,-4,4);
    h.FillRandom("gaus",50000);
    h.Draw();
    canvas.SaveAs("/work/username/histo.png");
}
```

Using Athena in jobs

- To get ATHENA (use without argument to list available versions)
  - `source /work/atlas/install_scripts/setup_grid_atlas.sh version`
- Create a work area (under `/scratch/username/`)
  - `/work/atlas/install_scripts/setup_athena_workarea_grid.sh`
- To use work area
  - `cd ${WORKAREA}; source /workarea_version mysetup.sh`
- You can copy an existing work area instead of making a new one

Athena Hello World

- Task: Run the athena hello world job
- Athena will have text output in the .out file

```
# 1) Setup athena
source /work/atlas/install_scripts/setup_grid_atlas.sh 14.5.2.2
source /work/atlas/install_scripts/setup_athena_workarea_grid.sh
cd ${WORKAREA}
source mysetup.sh

# 2) Get hello world top options
get_files -jo HelloWorldOptions.py

# 3) Run athena
athena.py HelloWorldOptions.py
```

Use nordugrid tools

- Requires grid-certificate with atlas voms
- Ensure `~/.globus/userkey.pem` is only readable by you
- Make voms directory:
  - `bash /work/atlas/install_scripts/setup_voms_dir.sh`
- Setup nordugrid toolkit
  - `cd /work/atlas/software/nordugrid-clients/nordugrid-arc-standalone-0.6.4/; source setup.sh`
- Get a voms proxy
  - `voms-proxy-init -vomses=$HOME -voms=atlas`

Using DQ-2

- Run from fimm.bccs.uib.no (not in jobs) with a valid voms proxy
- Setup
  - `cd /work/atlas/software/dq2/; source setup.sh`
  - `export DQ2_LOCAL_SITE_ID=ROAMING`
- Use as normal:
  - `dq2-ls fdr08_run2.0052280.physics_Jet.*`

The End