Monitoring the Production Workflow

Author: Seth Underwood (DRC/HPTg)
Phone: +1 - 609 - 987 - 5058
Fax: +1 - 609 - 987 - 5063
Email: Seth.Underwood@noaa.gov

National Oceanic and Atmospheric Administration
Geophysical Fluid Dynamics Laboratory
Princeton, NJ 08542
http://www.gfdl.noaa.gov
Moab specific commands

- msub
- showq
- checkjob
- mjobctl
- canceljob
Getting Help

• Most Moab commands have an online man page
  – Run “man <moab_command>” to read

• Some commands have the –h (help) option
  – e.g. checkjob –h

• On the wiki:
msub

- Submit a script to Moab
- FRE passes required msub options in the run script's #PBS header flags
showq

• Displays information about jobs, and their state in the Moab queue
  
  ```
  showq [OPTIONS]
  ```

• Available Moab states:
  – Running
    • Jobs currently running
  – Eligible
    • Jobs eligible to run when resources are available
    • Maximum of 24 jobs per user
  – Blocked
    • Jobs not eligible to run, or on system/user/batch hold
  – Recently completed
    • Completed in the last 24 hours
    • Show using the ‘-c’ option
showq

### Jobs Running

<table>
<thead>
<tr>
<th>JOBID</th>
<th>USERNAME</th>
<th>STATE</th>
<th>PROCs</th>
<th>REMAINING</th>
<th>STARTTIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>gnea.43416</td>
<td>Whit.And</td>
<td>Running</td>
<td>2160</td>
<td>5:18:55</td>
<td>Sun Nov 14 19:45:03</td>
</tr>
<tr>
<td>gnea.43419</td>
<td>Mehmert.I</td>
<td>Running</td>
<td>16</td>
<td>5:27:52</td>
<td>Sun Nov 14 19:54:00</td>
</tr>
<tr>
<td>gnea.43473</td>
<td>Mehmert.I</td>
<td>Running</td>
<td>96</td>
<td>7:08:06</td>
<td>Sun Nov 14 21:32:14</td>
</tr>
<tr>
<td>gnea.43528</td>
<td>Larry.Ho</td>
<td>Running</td>
<td>888</td>
<td>7:17:03</td>
<td>Mon Nov 15 00:43:11</td>
</tr>
</tbody>
</table>

8 active jobs

### Eligible Jobs

<table>
<thead>
<tr>
<th>JOBID</th>
<th>USERNAME</th>
<th>STATE</th>
<th>PROCs</th>
<th>WCLIMIT</th>
<th>QUEUETIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>gnea.13159</td>
<td>James.Bu</td>
<td>Idle</td>
<td>1</td>
<td>00:01:00</td>
<td>Wed Oct 6 16:41:51</td>
</tr>
<tr>
<td>gnea.13160</td>
<td>James.Bu</td>
<td>Idle</td>
<td>1</td>
<td>00:01:00</td>
<td>Wed Oct 6 16:43:10</td>
</tr>
<tr>
<td>gnea.65</td>
<td>Amy.Lang</td>
<td>Idle</td>
<td>1</td>
<td>06:00:00</td>
<td>Wed Aug 25 23:30:32</td>
</tr>
<tr>
<td>tims.3705</td>
<td>PEER:gae</td>
<td>Idle</td>
<td>625</td>
<td>12:00:00</td>
<td>Thu Oct 28 10:32:29</td>
</tr>
<tr>
<td>gnea.36776</td>
<td>Whit.And</td>
<td>Migrated</td>
<td>1</td>
<td>12:00:00</td>
<td>Tue Nov 9 10:12:45</td>
</tr>
<tr>
<td>gnea.36807</td>
<td>Whit.And</td>
<td>Migrated</td>
<td>1</td>
<td>12:00:00</td>
<td>Tue Nov 9 10:41:11</td>
</tr>
<tr>
<td>gnea.40616</td>
<td>William</td>
<td>Migrated</td>
<td>1</td>
<td>04:00:00</td>
<td>Thu Nov 11 15:41:04</td>
</tr>
</tbody>
</table>

7 eligible jobs

### Blocked Jobs

<table>
<thead>
<tr>
<th>JOBID</th>
<th>USERNAME</th>
<th>STATE</th>
<th>PROCs</th>
<th>WCLIMIT</th>
<th>QUEUETIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>gnea.37917</td>
<td>Whit.And</td>
<td>BatchHold</td>
<td>48</td>
<td>2:00:00</td>
<td>Wed Nov 10 07:44:57</td>
</tr>
<tr>
<td>gnea.36923</td>
<td>William</td>
<td>BatchHold</td>
<td>1</td>
<td>4:00:00</td>
<td>Tue Nov 9 11:21:20</td>
</tr>
<tr>
<td>gnea.36544</td>
<td>William</td>
<td>Migrated</td>
<td>1</td>
<td>4:00:00</td>
<td>Thu Nov 11 12:31:48</td>
</tr>
<tr>
<td>gnea.36015</td>
<td>William</td>
<td>BatchHold</td>
<td>1</td>
<td>4:00:00</td>
<td>Thu Nov 9 01:58:36</td>
</tr>
<tr>
<td>gnea.39171</td>
<td>William</td>
<td>BatchHold</td>
<td>1</td>
<td>4:00:00</td>
<td>Wed Nov 10 20:24:03</td>
</tr>
<tr>
<td>gnea.39031</td>
<td>William</td>
<td>BatchHold</td>
<td>1</td>
<td>4:00:00</td>
<td>Wed Nov 10 19:08:02</td>
</tr>
<tr>
<td>gnea.40007</td>
<td>William</td>
<td>BatchHold</td>
<td>1</td>
<td>4:00:00</td>
<td>Thu Nov 11 05:46:09</td>
</tr>
<tr>
<td>gnea.30249</td>
<td>William</td>
<td>Migrated</td>
<td>1</td>
<td>4:00:00</td>
<td>Thu Nov 11 12:33:00</td>
</tr>
<tr>
<td>gnea.37562</td>
<td>William</td>
<td>BatchHold</td>
<td>1</td>
<td>4:00:00</td>
<td>Tue Nov 9 19:40:43</td>
</tr>
<tr>
<td>gnea.40297</td>
<td>William</td>
<td>BatchHold</td>
<td>1</td>
<td>4:00:00</td>
<td>Thu Nov 11 10:54:38</td>
</tr>
</tbody>
</table>

10 blocked jobs
showq

• Options to show only certain job states
  – -r :: running jobs
  – -i :: eligible jobs
  – -b :: blocked jobs
  – -c :: completed jobs

• Options to change display
  – -n :: display job name instead of job id
  – -v :: display full remote and local resource information
  – -n -v :: display both the job name and job id
showq

• Options to restrict displayed jobs
  – -p <partition> :: display only jobs that are running, or can run on <partition>
  – -u <user> :: display only jobs owned by <user>
  – -w <constraint>=<value> :: display only jobs with the given <constraint>=<value>

• Constraints
  – user
  – group
  – acct
  – class
  – qos

• showq -w acct=gfdl_f_c2
checkjob

- Display detailed job information
  - Blocking reason
  - Job script

```
checkjob [OPTIONS] <jobid>
```

- `-v :: control verbosity of output`
  - Multiple `-v` options can be given to increase verbosity
  - e.g. `checkjob -v -v` will also show the run script
shell> checkjob gaea2.372381

job gaea2.372381

AName: CM2.5_A_Control-1990
State: Idle
Creds: user:Seth.Underwood group:gfdl account:windfall class:batch qos:norm
WallTime: 00:00:00 of 4:00:00
BecameEligible: Sun Jun 10 21:09:27
SubmitTime: Sun Jun 10 21:07:44
(Time Queued Total: 19:06:27 Eligible: 00:17:58)

Total Requested Tasks: 6496
...
Partition List: c2
Flags: RESTARTABLE,FSVIOLATION,GLOBALQUEUE
Attr: FSVIOLATION
StartPriority: -524167
NOTE: Using Fallback Account
Holds: Batch:Admin
NOTE: job cannot run (job has hold in place)
checkjob

shell> checkjob -v gaea2.375806

job gaea2.375806 (RM job '6038231')

AName: CM3Z_Control-1860_D2H3__1
State: Running
Creds: user: Larry.Horowitz  group: gfdl  account: gfdl_m_c2  class: batch  qos: dual
WallTime:  7:46:59 of 16:00:00
BecameEligible: Mon Jun 11 10:48:25
SubmitTime: Mon Jun 11 10:48:32
 (Time Queued  Total: 00:00:08  Eligible: 00:01:41)
...
Shell: /bin/tcsh
SubmitDir: /lustre/fs/scratch/Larry.Horowitz/work/CM3Z_Control-1860_D2H3__1.06038192
UMask: 0022
Executable: /moab/spool/moab.job.gC9faf


stdout file name: "AName".o"RM job"
CM3Z_Control-1860_D2H3__1.06038231

stdout file directory
checkjob

job gaea2.562250

AName: CM2.1U_CTL1990_E1_restoreSST_climEntirePac_rerun.o6053755.finisher
State: idle  EState: Deferred
Creds: user:Yu.Kosaka group:gfdl account:gfdl_g+_c2+_c2 class:ldtn qos:norm
... OutputFile: /lustre/lfs/scratch/Yu.Kosaka/ENSO/cm2.1/CM2.1U_CTL1990_E1_restoreSST_climEntirePac_rerun(ncrc2.default-prod/stdout/run/ (-)
BypassCount: 174
User Specified Partition List: es
Partition List: es
SrcRM: internal
Flags: RESTARTABLE,GLOBALQUEUE
StartPriority: 428
PE: 1.00
Holds: Defer:InvalidAccount (DeferTime: 00:50:15 DeferCount: 19)
...
GLOBAL available: 5820 tasks supported
NOTE: job violates constraints for partition gfdl (partition gfdl not in job partition mask)
Message[0] server rejected request with status code 740 - Project gfdl_g+_c2+_c2 does not exist
mjobctl

- Monitor, modify, and hold/unhold jobs

  mjobctl [OPTIONS] <job_list>

- `<job_list>` is a comma separated list of job IDs

- Options to modify job
  - `-m <key>=<value>`
    - Change account
      - Mjobctl -m account=gfdl_g+_c2 gaea2.562250

- Look at ‘man mjobctl’ for `<key>` values
canceljob

- Cancels submitted jobs

```
checkjob <jobid> [<jobid> ...]
```