



Central cluster communication and interaction is done with the pbs program family. This cheat sheet summarizes frequently used commands and options.

qsub (submit)

submit a job description stored in jobfile:

```
qsub jobfile
```

submit a job containing a single command:

```
echo "sleep 5m" | qsub
```

request an interactive job (shell on worker node):

```
qsub -I
```

submit a job with additional options (see page 3):

```
qsub jobfile -N jobname -l walltime=24:00:00
```

request a node with 128 GB of ram:

```
qsub jobfile -l mem=128gb
```

request one node with 32 cpus:

```
qsub jobfile -l nodes=1:ppn=32
```

qstat (statistics)

get an overview for your jobs only:

```
qstat [optional job id]
```

alternative output format (verbose):

```
qstat -a [optional job id]
```

summarize all queues (containing jobs from others):

```
qstat -q
```

list your running jobs:

```
qstat -r
```

qselect (selection)

list ids of your (running) jobs:

```
qselect [optional -r]
```

list ids of jobs with name pattern <pattern>

```
qselect | grep <pattern>
```



Post submission job interaction can be done with qalter. It is of course also possible to cancel jobs after submission.

qdel (deletion)

delete (cancel) a job by id:

```
qdel <jobid>
```

delete all running jobs:

```
qdel all
```

give the job 10 seconds to settle before being (forcefully) killed:

```
qdel -W 10 <jobid>
```

cancel all jobs with the name pattern <pattern>

```
qselect | grep <pattern> | xargs -n1 qdel
```

```
# unfortunately qdel cannot handle wildcards  
# therefor we have to assemble the list  
# ourselves and pass it to qdel
```

qalter (deletion)

increase walltime (grace period) to some value:

```
qalter -l walltime=48:00:00 <jobid>
```

increase priority value for a queued job:

```
qalter -p <value between -1024:1023>
```

batch change memory requirement for all jobs:

```
qselect | xargs -n1 qalter -l mem=4000mb
```

add job dependency to a job id:

```
qalter -W depend=afterok:<1st-job> <2nd-job>
```

```
# will start execution for job2 only when job1  
# finished succesfully
```



There is extensive documentation for all pbs commands in the form of a manual page. Run `man <command>` on the gridmaster and use PgUp/PgDown and "q" to navigate the manpages. The following summarizes useful qsub meta information and was taken from the *qsub* manpage. You can either use these parameters in the form `#PBS -X value` in your jobfile or as `-X value` directly with the qsub command.

`#PBS -N job-name-$variable`

set the job name – useful when combined with subject or loop variable and project prefix

`#PBS -l walltime=24:00:00`

set the expected running time for the job – will determine queue and thus job priority – Job will be killed after!

`#PBS -l mem=10gb`

request 10gb of memory for this job
see *man pbs_resources* for more options

`#PBS -d project/data/`

set working directory for the job file (initial change dir)

`#PBS -o /home/mpib/krause/logs`

store job output file in custom directory, if destination exists and is a file, output will be added (not in order!) to the file – useful for g

`#PBS -j oe`

join error stream and output stream together in a single file

`#PBS -o /dev/null`

`#PBS -e /dev/null`

discard standard error and standard output streams entirely

`#PBS -M krause[, nehls,thelen]`

email address (list) used for notifications
will be expanded to `user@mpib-berlin.mpg.de`

`#PBS -m <str>`

filter mail notification, where *<str>* either is a combination of 'a', 'b' and 'e' (signal on Abort, Begin, End) or a single 'n' to disable mail notification

`#PBS -h`

set a *hold* flag on this job
this job can be released/started at a given point in time
with `qrls <jobid>`



Do you have any questions?

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