ALTAIR PBS Professional®

Altair PBS CHEAT SHEET

Introduction

PBS Professional is a fast, powerful workload manager designed to improve productivity, optimize utilization and efficiency, and simplify administration for clusters, clouds, and supercomputers — from the biggest HPC workloads to millions of small, high-throughput jobs.

User Commands	
qsub <job_script/arguments>	Submit a job
qsub -I	"I" is upper-case of i. Submit an interactive job
qsub -IX	"I" is upper-case of i . Submit an interactive job with X forwarding
qstat -Q	Print Queue information
qhold <jobID>	Hold a job
qrls <jobID>	Release a job
pbsnodes -a	Print node information
Job Monitoring	
qstat <jobID>	Job status
qstat -f <jobID>	Job status with all information
qstat -x	Job History
qstat -ans	Job-status with comments and vnode info
qstat <jobID> @pbs102	Job status at specific cluster
Deleting jobs	
qdel <jobID>	Delete a job (kill a job)
qdel -W force <jobID>	Force kill a job
Requesting job resources	
-l select=3:ncpus=128	Request for 3 chunks/nodes with 128 CPUs (cores) each
-l select=1:ncpus=128:mem=500gb	1 chuck/node with 128 CPUs (cores) and 500GB of RAM
-l walltime=01:00:00	Request for 1hour total wall-time HH:MM:SS
-l select=3:ncpus=128:ngpus=1:mem=254gb	Request for 1 chunk/node with 1 GPU, 128CPUs (cores) and 254GB of RAM
-l container_image=docker.io/tensorflow:latest	Requesting container image as resource for container job
Job Submission options (qsub)	
-P <project_account>	Specifying a project account
-N <jobname>	Specifying a name to the job
-l <resource_list>	Requesting job resources (select,ncpus, ngpu,mem.....)
-q normal	Specifying the queue name (normal/ai)
-v <alphanumeric>	Exporting specific environment variables.
-e <filename>	Specifying path for error file
-o <filename>	Specifying path for output file
-j oe	Merging output and error files

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-J X-Y [:z]	Defining job array
-h	Holding a job
-M id@domain.com	Setting email recipient list
-m abe	Specifying email notification events a: aborted, b: begins, e: terminates
-a date_time	Deferring execution. Date_time format: [[[[YYYY]MM]DD]hhmm[.SS]]
-W depend=<type>:<arg_lists> <job ID>	Specifying job dependencies EG: qsub -W depend=afterok:123.pbs101:124.pbs101 myjobscript.sh
Environment Variables	
PBS_JOBID	Job identifier given by PBS when the job is submitted. Created upon execution.
PBS_JOBNAME	Job name given by user. Created upon execution.
PBS_NODEFILE	The filename containing a list of vnodes assigned to the job.
PBS_O_WORKDIR	Absolute path to directory where qsub is run. Value taken from user's submission environment
TMPDIR	Pathname of job's scratch directory
NCPUS	Number of threads, defaulting to number of CPUs (cores), on the vnode
OMP_NUM_THREADS	Number of Threads per process
PBS_ARRARY_ID	Identifier for job arrays. Consists of sequence number.
PBS_ARRARY_INDEX	Index number of subjob in job array.
PBS_JOBDIR	Pathname of job's staging and execution directory on the primary execution host.
Job States	
E	Job is exiting after having run
F	Job is finished. Job has completed execution, job failed during execution, or job was deleted
H	Job is held
M	Job was moved to another PBS complex
Q	Job is queued, eligible to run or be routed
R	Job is running
S	Job is suspended by PBS
T	Job is in transition
W	Job is waiting for its requested execution time to be reached, or job specified a stage-in request which failed for some reason