PBS Script

Basic PBS script commands

PBS script command	Description
#PBS -S /bin/bash	Sets the shell that the job will be executed on the compute node
#PBS -l nodes=1:ppn=1 #PBS -l procs=1	Requests for 1 processors on 1 node.
#PBS -l walltime=5:00:00	Sets the maximum runtime of 5 hours for your job
#PBS –M <email>	Sets the email address for sending notifications about your job state.
#PBS -m abe	Sets the scedualing system to send you email when a mail is sent when the job is aborted by the batch system. b mail is sent when the job begins execution. e mail is sent when the job terminates.
#PBS –q <quename>	Puts your job into <queuename> queue

PBS script commands

PBS script command	Description
#PBS -l nodes=1:ppn=1 #PBS -l procs=1	Requests for 1 processors on 1 node.(Serial)
#PBS -l nodes=1:ppn=X	Requests for X processors on the same node (OpenMP)
#PBS -l nodes=X:ppn=1 #PBS -l procs=X	Requests for X processors which may be running on any nodes (MPI)
#PBS -l nodes=X:ppn=Y	Requests X nodes with Y processes (Hybrid)
#PBS –t 5 #PBS –t 0-4 #PBS –t 0,1-4 #PBS –t 0,1,2,3,4	Requests Job array of 5 jobs
#PBS –t X%Y ex: #PBS –t 100%10	Requests Requests Job array of X jobs with only a maximum of Y jobs running at the same time

PBS script commands

PBS script command	Description
#PBS -l mem=4gb	Requests 4 GB of memory in total
#PBS –l pmem=4gb	Requests 4GB of memory per process
#PBS –l feature=X5675	Requests 1 procesor on node with feature X5675 which is the newer processor on Jasper
#PBS –l nodes=2:blue:ppn=2	Request 2 cores on each of 2 nodes with blue feature.
#PBS –l nodes=2:gpus=3:ppn=4	Request 4 cores and 2 gpus on each of 2 nodes
#PBS –l nodes=cl2n002+cl2n003	Requests 2 nodes cl2n002 and cl2n003
#PBS –l host=cl2n002	Requests host or node cl2n002

PBS script commands

PBS script command	Description
#PBS -l naccesspolicy=singleuser	Requests to only run on nodes with other jobs of same user
#PBS -l naccesspolicy=singlejob #PBS -n	Requests to only run on nodes with no other jobs
#PBS -l naccesspolicy=singletask	Requests that the each part of the job will only run on a separate node without anything else running on that node.
#PBS –A <accounting group>	Requests that a specific accounting group be used for this job
#PBS -W x=GRES:MATLAB=2 #PBS -l other=MATLAB=2	Requests 2 units of a generic resource or software license MATLAB
qsub –W depend=afterok:<job1id> j2.pbs	Job 2 that depends on job1 and will not start until job1 completes successfully.
#PBS -l epilogue=/home/fujinaga/epilogue.script	Runs epilogue script for maximum of 5 minutes after job is complete.
#PBS –l prologue=/home/fujinaga/prologue.script	Runs prologue script for maximum of 5 minutes before job is complete.
#PBS –l nodes=5:ppn=12+nodes=1:ppn=1	Requests 5 nodes with 12 processors each and a single node with 1 core.

PBS Environment Variables

Environment Variable	Description
PBS_JOBNAME	User specified job name
PBS_ARRAYID	Job array index for this job
PBS_GPUFILE	list of GPUs allocated to the job located 1 per line: <host>-gpu<number>
PBS_O_WORKDIR	Job's submission directory
PBS_TASKNUM	Number of tasks requested
PBS_O_HOME	Home directory of submitting user
PBS_JOBID	Unique pbs job id
PBS_NUM_NODES	Number of nodes allocated to the job
PBS_NUM_PPN	Number of procs per node allocated to the job
PBS_O_HOST	Host on which job script is currently running
PBS_QUEUE	Job queue
PBS_NODEFILE	File containing line delimited list on nodes allocated to the job
PBS_O_PATH	Path variable used to locate executables within job script

Getting information on your Job

Command	What its used for
jobinfo -j	List all your jobs and their state
qstat –t –u $USER	List all your array jobs and the subcomponents and their state.
qstat –a	List all jobs on the system and their state.
qstat –r	List all running jobs on the system.
showq	List all jobs on the system and their state.
showq –i	List all jobs being considered for scheduling and their priority
showq –b	Lists all blocked (unable to be run) jobs
qstat –f <Jobid>	List detailed information on Job
checkjob <Jobid>	List detailed information on Job
checkjob -v -v <Jobid>	List detailed information on Job, including history and why it is not running now on each node.

Getting information on you and your group

Command	What its used for
showq –i jobinfo -i	Show a list of jobs that are considered for scheduling and their priority
jobinfo -f	To get your group's target and actual usage:
jobsinfo -v –f	Same as above but also shows group's target and historical usage
jobinfo -a	To see your group's target and actual usage information for all groups

Getting information on your Cluster

Command	What its used for
jobinfo –n (mdiag –n)	List the state of every node in the entire cluster.
showq –i jobinfo -i	Show a list of jobs that are considered for scheduling and their priority
pdsnodes –ln	Lists offline or down nodes in the cluster
pbsnodes –a	List information on every node in the cluster
showbf	Shows how many idle resources are available at the moment and for how long will they be available.
showres	Shows reservations on system
checkjob <jobid> | grep Holds	Show any holds on a job in the system