

New Features in PBS

Category: Running Jobs with PBS

Some of the new features relevant to users are listed below:

Use of the Shrink-to-Fit Feature (version 11.3)

The shrink-to-fit (STF) feature allows a user to specify a range of acceptable walltimes for a job, so that PBS can run the job sooner than it might otherwise. This feature is particularly helpful when scheduling jobs before an upcoming dedicated time.

For example, suppose your typical job requires 5 days of walltime. If there were less than 5 days left before the start of dedicated time, the job wouldn't run until after dedicated time. However, if you know that your job can do enough useful work running for 3 days or longer, you can submit it in the following way:

```
% qsub -l min_walltime=72:00:00,max_walltime=120:00:00 job_script
```

When PBS attempts to run your job it will initially look for a time slot of 5 days; but when no such time slot is found between now and the dedicated time, it will look for smaller and smaller time slots, down to the **min_walltime** of 3 days.

If you have an existing job that is still queued, you can use the **qalter** command to add these **min_walltime** and **max_walltime** attributes:

```
% qalter -l min_walltime=hh:mm:ss,max_walltime=hh:mm:ss jobid
```

Or change the walltime with the command:

```
% qalter -l walltime=hh:mm:ss jobid
```

Show the Processor Model (version 10.4)

Processor model (for example, Harpertown, Nehalem-EP, Westmere, and Sandy Bridge) can be displayed with:

```
%qstat -W o=+model
```

Show Job History (version 10.1)

Use the PBS **-x** option to obtain job history information, including the submission parameters, start/end time, resources used, etc., for jobs that finished execution, were deleted or are still running.

The job history for finished jobs is preserved for a specific duration. After the duration has expired, PBS deletes the job history information and it is no longer available. Currently, the duration is set to be **7 days** on Pleiades.

```
%qstat -fx job_id
```

Advance and Standing Reservations (version 9.2)

An advance reservation can be made for a set of resources for a specified time. The reservation is only available to a specific user or group of users.

A standing reservation is an advance reservation which recurs at specified times. For example, the user can reserve 8 nodes every Wednesday from 5pm to 8pm, for the next month.

The reservation is made using the `pbs_rsub` command. PBS either confirms that the reservation can be made, or rejects the request. Once the reservation is confirmed, PBS creates a queue for the reservation's jobs. Jobs are then submitted to this queue.

The following example shows the creation of an advance reservation asking for 1 node with 8 CPUs, a start time of 11:30 and a duration of 30 minutes.

```
%pbs_rsub -R 1130 -D 00:30:00 -l select=1:ncpus=8
```

A reservation can be deleted using the `pbs_rdel` command.

For more information, see **man pbs_rsub** and **man pbs_rdel**.

WARNING: Requests to use advance and standing reservations must be approved by NAS management. Only staff with special privilege can create the reservations for users.

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