

Common Reasons Why Jobs Won't Start

Category: Troubleshooting PBS Jobs

If your job does not run after it has been successfully submitted, it might be due to one of the following reasons:

- The job is waiting for resources
- Your mission share has run out
- The system is going into dedicated time
- Scheduling is turned off
- The job has been placed on hold
- Your home filesystem or default /nobackup filesystem is down

You can often find out why a job does not start by running `tracejob jobid` on the PBS server `pbsp11`, which prints log messages for a PBS job, or `qstat -as jobid` on any Pleiades front-end systems, which displays all information about a job.

The following sections provide more details about each scenario, along with troubleshooting steps.

The Job is Waiting for Resources

Your job might be waiting for resources for one of the following reasons:

- All resources are busy running jobs, and no other jobs can be started until resources become available again
- There is a higher-priority job that needs more resources than are currently available, so PBS is draining the system and not running any new jobs in order to accommodate the high-priority job
- Users have submitted too many jobs at once (for example, more than 100), so the PBS scheduler is busy sorting jobs and cannot start new jobs effectively
- If you requested a specific node or group of nodes to run your job, it might wait in the queue longer than if nodes were not specified

To view job status and events, run the `tracejob` utility on `pbsp11`. For example:

```
pbsp11 $ tracejob 234567
Job: 234567.pbsp11.nas.nasa.gov
```

```
06/15/2012 00:23:55 S Job Modified at request of Scheduler@pbsp11.nas.nasa.gov
06/15/2012 00:23:55 L No available resources on nodes
06/15/2012 00:38:47 S Job Modified at request of Scheduler@pbsp11.nas.nasa.gov
06/15/2012 00:50:30 S Job Modified at request of Scheduler@pbsp11.nas.nasa.gov
```

```

06/15/2012 01:51:21 S Job Modified at request of Scheduler@pbspl1.nas.nasa.gov
06/15/2012 01:55:38 S Job Modified at request of Scheduler@pbspl1.nas.nasa.gov
06/15/2012 02:16:44 S Job Modified at request of Scheduler@pbspl1.nas.nasa.gov
06/15/2012 07:39:48 L Considering job to run
06/15/2012 07:39:48 L Job is requesting an exclusive node and node is in use

```

TIP: If the scheduler has not yet reviewed the job, no information will be available and the `tracejob` utility will not provide any output.

If your job requests an exclusive node and that node is in use, you can wait for the requested node, request a different node, or submit the job again without requesting a specific node.

To view the current node usage for each processor type, run the `node_states.sh` script. For example:

```
/u/scicon/tools/bin/node_stats.sh
```

```

Pleiades Nodes Total: 12457
Pleiades Nodes Used : 11675
Pleiades Nodes Free : 782

Harpertown Total: 4083, Used: 3948, Free: 135
Nehalem Total: 1279, Used: 1246, Free: 33
Westmere Total: 4662, Used: 4436, Free: 226
SandyBridge Total: 1723, Used: 1513, Free: 210
GPU nodes Total: 62, Used: 2, Free: 60
Devel wes Total: 504, Used: 418, Free: 86
Devel san Total: 144, Used: 112, Free: 32

```

Currently queued jobs are requesting: 1734 Harpertown, 1502 Nehalem, 5219 Westmere,

TIP: Add `/u/scicon/tools/bin` to your path in `.cshrc` or other shell start-up scripts to avoid having to type in the complete path for this tool.

Your Mission Share Has Run Out

If all of the cores within your mission directorate's share have been assigned, or if the new job would exceed your mission share, your job will not run. If resources appear to be available, they belong to other missions.

To view all information about your job, run `qstat -as jobid`. In the following sample output, a comment indicates that the job would exceed the mission share:

```

Qstat as 778574
JobID          User      Queue   Jobname  CPUs  wallt  Ss  wallt  Eff  wallt
-----
778574.pbspl3 msmith3  normal  my_GC    12    04:00  Q   07:06  --   04:00
Job would exceed mission CPU share

```

To view the share distribution among all mission directorates, run `qstat -W shares`. For example:

```
pfe20 $ qstat -W shares
Group      Share%  Use%   Share  Exempt   Use   Avail  Borrowed  Ratio  Waiting
-----
Overall    100     0  167456     0     0  167456     0   0.00     0
  ARMD     25     20   41864     0  34480   7384     0   0.82  11744
  HEOMD    23     17   38514     0  29632   8882     0   0.77   8304
  SMD      50     45   83728   2912  76728   7000     0   0.92 129376
  NAS       2      0    3349     0    384   2965     0   0.11    32
```

If your job exceeds your mission share, you might be able to borrow nodes from other mission directorates. To borrow nodes, your job must not request a wall-clock time that is too long (more than 4 hours on Pleiades). See [Mission Shares Policy on Pleiades](#) for more information.

The System is Going into Dedicated Time

When dedicated time (DED) is scheduled for hardware and/or software work, the PBS scheduler will not start a job if its projected end-time runs past the beginning of the DED time.

If you can reduce the requested wall-clock time so that your job will finish running prior to DED time, then your job can then be considered for running. To change the wall-clock time request for your job, follow the example below:

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

To find out whether the system is in dedicated time, run the command `schedule all`. For example:

```
pfe25$ schedule all
No scheduled downtime for the specified period.
```

Scheduling is Turned Off

Sometimes job scheduling is turned off by NAS Control Room staff or a system administrator. This is usually done when there are system or PBS issues that need to be resolved before jobs can be scheduled to run. When this happens, you should see the following message near the beginning of the `qstat -au your_userid` output.

```
+++Scheduling turned off.
```

Your Job Has Been Placed On Hold ("H" Mode)

A job can be placed on hold either by the job owner or by someone who has root privilege, such as a system administrator. If your job has been placed on hold by a system administrator, you should get an email explaining the reason for the hold.

Your Home Filesystem or Default /nobackup Filesystem is Down

When a PBS job starts, the PBS prologue checks to determine whether your home filesystem and default /nobackup are available before executing the commands in your script. If your default /nobackup filesystem is down, PBS cannot run your job and will put the job back in the queue. If your PBS job does not need any file in that filesystem, you can tell PBS that your job will not use the default /nobackup to allow your job to run.

For example, if your default is /nobackupp1 (for Pleiades), you can add the following in your PBS script:

```
#PBS -l /nobackupp1=0
```

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Computing at NAS -> Running Jobs with PBS -> Troubleshooting PBS Jobs -> Common Reasons Why Jobs Won't Start

<http://www.nas.nasa.gov/hecc/support/kb/entry/198/?ajax=1>