PBS directives and qsub options for **job dependencies and delayed-start jobs**

Options for delaying starting a job:

- `-W depend=afterok:jobid`
  - Delay starting this job until jobid has completed successfully.
- `-a [MM][DD]hhmm`
  - Delay starting this job until after the specified date and time. Month (MM) and day-of-month (DD) are optional, hour and minute are required.

If you have jobs which must not be started until some other job has begun, completed or failed, **you can set up a job dependency with –W depend=dependency**. The most common dependency is "afterok", the job can start only after another job has completed with an exit code of zero (ie no errors). For example, to wait until job 12345 has completed successfully before starting:

```bash
$ qsub -W depend=afterok:12345 testme.q
```

Other types of job dependencies, including dependencies on job arrays, can be found with "man qsub".

Job dependencies are useful when you have one job postprocessing the results of other jobs. Job dependencies also allow you to reserve resources more efficiently: such as single-CPU postprocessing of the result of a large parallel job.

Similarly, you can instruct Torque to **not start a job before a given date and time** by the command line option or PBS directive `-a hhmm`. The date/time format accepts day, month and year too. For example, to delay starting a job until midday on the first day of the next month:

```bash
$ qsub -a 011200 testme.q
```