Using Moab on BlueGene/L

General information on running jobs on BlueGene/L (BGL) can be found online at:

https://asc.llnl.gov/computing_resources/bluegenel/basics/

Moab and SLURM 1.3 have been installed on the BlueGene machines. There are only a few differences in submitting jobs to Moab to run on BGL and bgldev compared to the other LC machines.

1. Use the `msub -l nodes=<value>` option to specify the number of BlueGene compute nodes (c-nodes).

   Example: `msub -l nodes=1024` …

2. In the nodes specification, "k" is recognized as shorthand for 1024.

   Example: `msub -l nodes=2k`

3. The job's requested nodes must exactly match an available block in the (default or specified) SLURM partition. To see block and partition information, invoke `smap -Db -c`. Use the `msub -q <partition>` option to target your job to a specific SLURM partition.

4. On bgldev, you can request a portion of the mid-plane. You should specify a node count supported by the hardware (e.g., 128, 512, or 1024 for bgldev).

5. Use the new `msub --slurm` option to pass BGL-specific options to SLURM. The `--slurm` option **must** be the last msub option on the command line. All options after that are passed directly to SLURM's `sbatch` command.

   Example: `msub <program> -l nodes=512 --slurm --no-rotate`

6. Where a pdebug node partition is available on a BGL machine, we have configured the pdebug partition to disallow job submissions directly to SLURM using the `sbatch` command. This allows us to schedule the pdebug nodes based on fair-share instead of simple FIFO. This breaks with the policy in place on other LC machines with pdebug partitions.
7. The psub wrapper exists on BGL and bgldev, but its use is deprecated. The following options are not supported:

   a. The `psub -ln` k shorthand notation (to represent 1024 compute nodes) is not supported. Either specify the node count in numeric form only or use the msub command described in item 2 above.

   b. The `psub -bgl <attributes>` option is not supported. See item 5 above for the recommended alternative.

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