

# Checking memory usage of a batch job using gm.x

## Category: Memory Usage on Pleiades

NAS staff member Henry Jin created a tool called **gm.x** (available under `/u/scicon/tools/bin`) that reports the memory usage at the end of a run from each process.

**TIP:** Add `/u/scicon/tools/bin` to your `$PATH` so that you can invoke **gm.x** without the full path.

Use the `-h` option to find out what types of memory usage can be reported:

```
pfel%gm.x -h
gm - version 1.0
usage: gm.x [-opts] a.out [args]
  -hwm      ; high water mark (VmHWM)
  -rss      ; resident memory size (VmRSS)
  -wrss     ; weighted memory size (WRSS)
  -v        ; verbose flag
Default is by environment variable GM_TYPE (def=WRSS)
```

Note that the `-rss` option reports the last snapshot of resident set size usage captured by the kernel. With the `-wrss` option, **gm.x** calls the system function `get_weighted_memory_size`. More information about this function can be found from the man page `man get_weighted_memory_size`.

**gm.x** can be used for either OpenMP or MPI applications (linked with either SGI's MPT, MVAPICH or Intel MPI libraries) and you do not have to recompile your application for it. A script called **gm\_post.x** then takes the per process memory usage information and computes the total memory used and the average memory used per process.

To use **gm.x** for an MPI code, add **gm.x** after the `mpiexec` options. For example:

```
mpiexec -np 4 gm.x ./a.out
Memory usage for (r1i1n0,pid=9767): 1.458 MB (rank=0)
Memory usage for (r1i1n0,pid=9768): 1.413 MB (rank=1)
Memory usage for (r1i1n0,pid=9770): 1.413 MB (rank=3)
Memory usage for (r1i1n0,pid=9769): 1.417 MB (rank=2)
```

```
mpiexec -np 4 gm.x ./a.out | gm_post.x
Number of nodes      = 1
Number of processes = 4
Processes per node  = 4
Total memory         = 5.701 MB
```

Memory per node = 5.701 MB  
Minimum node memory = 5.701 MB  
Maximum node memory = 5.701 MB

Memory per process = 1.425 MB  
Minimum proc memory = 1.413 MB  
Maximum proc memory = 1.458 MB

If you use **dplace** to pin process, add **gm.x** after **dplace**:

```
mpiexec -np NN dplace -s1 gm.x ./a.out
```

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<http://www.nas.nasa.gov/hecc/support/kb/entry/220/?ajax=1>