SGI Altix 3000 (1500MHz, Itanium 2)

SPECompMpeak2001 = 42954
SPECompMbase2001 = 37869

Benchmark | Reference Time | Base Runtime | Base Ratio | Peak Runtime | Peak Ratio | 50000 | 100000 | 150000
--- | --- | --- | --- | --- | --- | --- | --- | ---
310.wupwise_m | 6000 | 81.7 | 73444 | 81.7 | 73444 | | | |
312.swim_m | 6000 | 52.6 | 114079 | 52.6 | 114079 | | | |
314.mgrid_m | 7300 | 146 | 50103 | 146 | 50103 | | | |
316.applu_m | 4000 | 82.1 | 48746 | 82.1 | 48746 | | | |
318.galgel_m | 5100 | 596 | 8555 | 425 | 11988 | | | |
320.equake_m | 2600 | 93.1 | 27913 | 60.5 | 42959 | | | |
324.apsi_m | 3400 | 84.1 | 40424 | 74.3 | 45740 | | | |
326.gafort_m | 8700 | 327 | 26638 | 269 | 32330 | | | |
328.fma3d_m | 4600 | 168 | 27384 | 122 | 37764 | | | |
330.art_m | 6400 | 60.7 | 105439 | 60.7 | 105439 | | | |
332.ammp_m | 7000 | 463 | 15119 | 473 | 14800 | | | |

**Hardware**

- **CPU:** Intel Itanium 2
- **CPU MHz:** 1500
- **FPU:** Integrated
- **CPU(s) enabled:** 64 cores, 64 chips, 1 core/chip
- **CPU(s) orderable:** 4-256
- **Primary Cache:** 16KBI + 16KB (on chip) per core
- **Secondary Cache:** 256KB (on chip) per core
- **L3 Cache:** 6.0MB (on chip) per core
- **Other Cache:** N/A
- **Memory:** 256 GB (16*1024MB PC2100 DIMMS per 4 core module)
- **Disk Subsystem:** 1 x 36 GB SCSI (Seagate Cheetah 15k rpm)
- **Other Hardware:** None

**Software**

- **OpenMP Threads:** 64
- **Parallel:** OpenMP
- **Operating System:** SGI ProPack(TM) 3
- **Compiler:**
  - Intel(R) Fortran Compiler for Linux 8.0 (Build 20040416)
  - Intel(R) C++ Compiler for Linux 8.0 (Build 20040416)
- **File System:** xfs
- **System State:** Single-user

**Notes/Tuning Information**

Baseline optimization flags:
- C programs: -openmp -O3 -ipo -ansi -ansi_alias -auto_ilp32 (ONESTEP)
- Fortran programs: -openmp -O3 -ipo (ONESTEP)
- OpenMP runtime library libguide.a statically linked

Portability Flags:
- 318.galgel_m: -FI -132

Extra Flags:
- 330.art_m: -DINTS_PER_CACHELINE=32 -DDBLS_PER_CACHELINE=16

Baseline user environment:
- OMP_NUM_THREADS=64
- limit stacksize 64000
- KMP_STACKSIZE 31M
- KMP_LIBRARY TURNAROUND
- OMP_DYNAMIC FALSE
- KMP_SCHEDULE static,balanced

Peak optimization flags:
- 310.wupwise_m: basepeak=true
- 312.swim_m: basepeak=true
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Notes/Tuning Information (Continued)

314.mgrid_m: basepeak=true
316.applu_m: basepeak=true
318.galgel_m: -openmp -O3 -ipo (ONESTEP)
             OMP_NUM_THREADS=16
320.equake_m: -openmp -O3 -ipo -ansi -ansi_alias -auto_ilp32 (ONESTEP)
324.apsi_m: -openmp -O3 -ipo -ansi_alias -auto_ilp32 (ONESTEP)
326.gafort_m: -openmp -O3 -ipo (ONESTEP)
328.fma3d_m: -openmp -O3 -ipo (ONESTEP)
330.art_m: basepeak=true
332.ammp_m: -openmp -O2 -ansi_alias -auto_ilp32 (ONESTEP)

Alternate sources:
Add critical region around update of linked list in parallel loop.
Approved src.alt available as ompm-purdue1-20040324.tar.gz
Used for 330.art_m, base and peak.

Peak sources:
Available as ompl src.alt in SPEC OMP v3.0
Used for 320.equake_m, 324.apsi_m, 326.gafort_m, and 328.fma3d_m.

For all benchmarks threads were bound to CPUs using the following submit command:
dplace -x2 -cNTM1,0 $command,
where NTM1 is the number of threads minus 1.
This binds threads in order of creation, beginning with the master
thread on cpu NTM1, the first slave thread on cpu NTM1-1, and so on.
The -x2 flag instructs dplace to skip placement of the lightweight
OpenMP monitor thread, which is created prior to the slave threads.