



OMPM2001 Result

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IBM Corporation
IBM System p 520 (4.2 GHz, 4 core, SLES)

SPECompMpeak2001 = 20443
SPECompMbase2001 = 18950

SPEC license #HPG0005 | Tested by: IBM | Test site: Austin, TX | Test date: Jan-2008 | Hardware Avail: Feb-2008 | Software Avail: Sep-2007

| Benchmark | Reference Time | Base Runtime | Base Ratio | Peak Runtime | Peak Ratio | |
|------------------|----------------|--------------|------------|--------------|------------|--|
| 310.wupwise_m | 6000 | 221 | 27108 | 221 | 27108 | |
| 312.swim_m | 6000 | 351 | 17088 | 335 | 17930 | |
| 314.mgrid_m | 7300 | 453 | 16127 | 439 | 16647 | |
| 316.applu_m | 4000 | 271 | 14733 | 240 | 16699 | |
| 318.galgel_m | 5100 | 279 | 18283 | 245 | 20853 | |
| 320.earthquake_m | 2600 | 107 | 24269 | 100 | 25995 | |
| 324.apsi_m | 3400 | 167 | 20352 | 157 | 21678 | |
| 326.gafort_m | 8700 | 512 | 16985 | 472 | 18420 | |
| 328.fma3d_m | 4600 | 367 | 12519 | 362 | 12720 | |
| 330.art_m | 6400 | 147 | 43650 | 125 | 51308 | |
| 332.ammp_m | 7000 | 571 | 12267 | 513 | 13651 | |

Hardware

CPU: POWER6
 CPU MHz: 4200
 FPU: Integrated
 CPU(s) enabled: 4 cores, 2 chips, 2 cores/chip, 2 threads/core
 CPU(s) orderable: 1,2,4 cores
 Primary Cache: 64 KB I + 64 KB D on chip per core
 Secondary Cache: 4 MB I+D on chip per core
 L3 Cache: None
 Other Cache: None
 Memory: 16 GB (8x2 GB) DDR2 667 MHz
 Disk Subsystem: 1x146 GB SAS 15K RPM
 Other Hardware: None

Software

OpenMP Threads: 8
 Parallel: OpenMP
 Operating System: SUSE Linux Enterprise Server 10 SP1
 Compiler: IBM XL C/C++ Advanced Edition for Linux, V9.0
 IBM XL Fortran Advanced Edition for Linux, V11.1
 Other Software: IBM Engineering and Scientific Subroutine Library for Linux on POWER, Version 4.3
 File System: ext3
 System State: Multi-User

Notes/Tuning Information

Portability Flags Variables

-qfixed used in: 310.wupwise_m, 312.swim_m, 314.mgrid_m, 316.applu_m, 324.apsi_m
 -qfixed=80 used in: 318.galgel_m
 -qsuffix=f=f90 used in: 318.galgel_m 326.gafort_m, 328.fma3d_m

Base Flags

C: -O5 -q32 -qsmp=omp -qarch=pwr6
 FORTRAN: -O5 -q32 -qsmp=omp -qarch=pwr6

Base & Peak Environment Flags:

ENV_OMP_NUM_THREADS = 8
 ENV_OMP_DYNAMIC=FALSE
 ENV_XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=1
 ENV_XLFRTEOPTS=intrinthds=1

Peak sources:

SPEC OMPL2001 source for 32bit systems modified for SPEC OMPM2001 used with 312.swim_m, 316.applu_m, 320.earthquake_m, 326.gafort_m

Peak Flags

-qsmp=omp -qarch=pwr6 used in all cases



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Notes/Tuning Information (Continued)

```

310.wupwise_m      basepeak = 1
312.swim_m:        -O4 -q32 -qpdf1/pdf2
                   ENV_XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=1
                   -O4 -q64
314.mgrid_m:       -O4 -q64
                   ENV_XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=1
316.applu_m:       -O4 -q64 -qpdf1/pdf2
                   ENV_XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=1
318.galgel_m:      -O4 -q64 -qessl
                   -B/usr/share/libhugetlbfs/ -t1 -Wl,--hugetlbfs-link=BDT
                   EXTRA_LIBS=-lesslsm
                   ENV_XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=1
                   ENV_HUGETLB_MORECORE=yes
320.equake_m:      -O5 -q64 -qpdf1/pdf2 -qhot=arraypad -Q
                   ENV_XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=1
324.apsi_m:        -O5 -q64
                   ENV_XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=1
                   ENV_HUGETLB_MORECORE=yes
                   ENV_LD_PRELOAD=libhugetlbfs.so
326.gafort_m:      -O4 -q32 -qhot=arraypad
                   -B/usr/share/libhugetlbfs/ -t1 -Wl,--hugetlbfs-link=B
                   ENV_XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=1
328.fma3d_m:       -O5 -q64 -qhot=libarraypad
                   ENV_XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=1
                   ENV_HUGETLB_MORECORE=yes
                   ENV_LD_PRELOAD=libhugetlbfs.so
330.art_m:         -O3 -q32 -qhot=arraypad -Q
                   ENV_XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=1
                   ENV_HUGETLB_MORECORE=yes
                   ENV_LD_PRELOAD=libhugetlbfs.so
332.ampm_m:        -O3 -q32 -qhot=arraypad -Q
                   ENV_XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=1
                   ENV_HUGETLB_MORECORE=yes
                   ENV_LD_PRELOAD=libhugetlbfs.so

```

```

C:                IBM XL C for Linux invoked as xlc_r
Fortran 90:       IBM XL Fortran for Linux invoked as xlf90_r

```

kernel release 2.6.16.46-0.12-ppc64.

ulimit -s (stack) set to unlimited.

Large pages reserved as follows by root user:

```
echo 240 > /proc/sys/vm/nr_hugepages
```

System configured with libhugetlbfs library for application access to large pages

Use flags-description file IBM-20070718-Linux.txt