



# OMPM2001 Result

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IBM Corporation  
IBM eServer p5 510 (1650 MHz, 2 CPU)

SPECompMpeak2001 = 6108  
SPECompMbase2001 = 5478

SPEC license #HPG0005 | Tested by: IBM | Test site: Austin, TX | Test date: Feb-2005 | Hardware Avail: Feb-2005 | Software Avail: Dec-2004

Benchmark	Reference Time	Base Runtime	Base Ratio	Peak Runtime	Peak Ratio
310.wupwise_m	6000	928	6463	928	6463
312.swim_m	6000	1528	3926	1353	4436
314.mgrid_m	7300	2685	2719	1490	4900
316.applu_m	4000	799	5004	662	6046
318.galgel_m	5100	389	13103	330	15435
320.earthquake_m	2600	377	6898	377	6898
324.apsi_m	3400	672	5060	590	5766
326.gafort_m	8700	1553	5603	1553	5602
328.fma3d_m	4600	1509	3048	1508	3049
330.art_m	6400	442	14473	441	14503
332.ammp_m	7000	2049	3416	2049	3416

### Hardware

CPU: POWER5  
 CPU MHz: 1650  
 FPU: Integrated  
 CPU(s) enabled: 2 cores, 1 chip, 2 cores/chip (SMT on)  
 CPU(s) orderable: 1,2  
 Primary Cache: 64KBI+32KBD (on chip)/core  
 Secondary Cache: 1920KB unified (on chip)/chip  
 L3 Cache: 36MB unified (off-chip)/DCM, 1 DCM/SUT  
 Other Cache: None  
 Memory: 8x1GB  
 Disk Subsystem: 2x36GB SCSI, 15K RPM  
 Other Hardware: None

### Software

OpenMP Threads: 4  
 Parallel: OpenMP  
 Operating System: AIX 5L V5.3  
 Compiler: XL C/C++ Enterprise Edition Version 7.0 for AIX  
 XL Fortran Enterprise Edition V9.1 for AIX  
 Other Software: ESSL for AIX V4.2  
 File System: AIX/JFS2  
 System State: Multi-user

## Notes/Tuning Information

### Portability Flags & Environment 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: -qpdf1/pdf2  
 -q64 -O5 -blpdata -qalign=natural -qhot=arraypad -Q -qsmp=omp  
 FORTRAN: -O5 -qhot=arraypad -qipa=noobject -qipa=partition=large -qmaxmem=-1 -qsmp=omp  
 EXTRA\_LDFLAGS=-bmaxdata:0x80000000

### Base & Peak User Environment:

OMP\_NUM\_THREADS=4  
 OMP\_DYNAMIC=FALSE  
 XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:SCHEDULE=STATIC:STARTPROC=0:STRIDE=1  
 MALLOCMULTIHEAP=1  
 MEMORY\_AFFINITY=MCM

### Peak Flags:

-qsmp=omp used in all cases  
 310.wupwise\_m: basepeak=1  
 312.swim\_m: -q64 -O5 -qarch=pwr3 -qtune=pwr3 -blpdata



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## Notes/Tuning Information (Continued)

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314.mgrid_m:      -qpdf1/pdf2
                  -q64 -O5 -blpdata -qalign=natural -qhot=arraypad -Q
                  OMP_NUM_THREADS=2
XLSMPOPTS=SPINS=0:STACK=8000000:SCHEDULE=STATIC:STARTPROC=0:STRIDE=2
316.applu_m:      -q64 -O4 -qhot -qmaxmem=-1 -blpdata
318.galgel_m:     -O5 -q64 -qessl -lesslsmp -blpdata
320.equake_m:     basepeak=1
324.apsi_m:       -qpdf1/pdf2
                  -q64 -O5 -blpdata -qalign=struct=natural -qhot=arraypad -Q
326.gafort_m:    -O5 -qipa=partition=large
                  EXTRA_LDFLAGS=-bmaxdata:0x80000000
328.fma3d_m:     -O5 -qhot=arraypad -qipa=noobject -qipa=partition=large -qmaxmem=-1
                  EXTRA_LDFLAGS=-bmaxdata:0x80000000
330.art_m:       -qpdf1/pdf2
                  -q64 -O5 -blpdata -qalign=natural -qhot=arraypad -Q
332.ampm_m:      -qpdf1/pdf2
                  -q64 -O5 -blpdata -qalign=natural -qhot=arraypad -Q

```

### Alternate sources:

Add critical region around update of linked list in parallel loop.  
 Required src.alt available as ompm-purdue1-20040324.tar.gz  
 Used for 330.art\_m, base and peak.

### Peak sources:

SPEC OMPL2001 source for 32bit systems modified for SPEC OMPM2001 used  
 with 312.swim\_m, 316.applu\_m, 326.gafort\_m. Available as ompl.32 src.alt  
 in SPEC OMP2001 v3.0.

APAR IY62267 was applied to AIX 5L V5.3 to achieve Maintenance Level 1.

SMT: Acronym for "Simultaneous Multi-Threading". A processor technology that allows  
 the simultaneous execution of multiple thread contexts within a single processor  
 core. (Enabled by default)

DCM: Acronym for "Dual-Chip Module" (one dual-core processor chip + one L3-cache chip)

ESSL: Engineering and Scientific Subroutine Library

SUT: Acronym for "System Under Test"

C: IBM XL C for AIX invoked as xlc\_r

Fortran 90: IBM XL Fortran for AIX invoked as xlf90\_r

ulimits set to unlimited.

Large page mode and memory affinity were set as follows:

```

vmo -r -o lpgg_regions=512 -o lpgg_size=16777216 -o memory_affinity=1
chuser capabilities=CAP_BYPASS_RAC_VMM,CAP_PROPAGATE $USER
shutdown -r

```