



# OMPM2001 Result

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IBM Corporation  
IBM eServer p5 520 (1650 MHz, 2 CPU)

SPECompMpeak2001 = 5228  
SPECompMbase2001 = 5051

SPEC license #HPG0005 | Tested by: IBM | Test site: Austin, TX | Test date: Jun-2004 | Hardware Avail: Aug-2004 | Software Avail: Oct-2004

Benchmark	Reference Time	Base Runtime	Base Ratio	Peak Runtime	Peak Ratio
310.wupwise_m	6000	925	6486	925	6486
312.swim_m	6000	1536	3907	1536	3907
314.mgrid_m	7300	3490	2092	3490	2092
316.applu_m	4000	793	5044	753	5314
318.galgel_m	5100	405	12594	405	12594
320.earthquake_m	2600	436	5964	393	6615
324.apsi_m	3400	668	5089	668	5089
326.gafort_m	8700	1611	5399	1612	5397
328.fma3d_m	4600	1523	3020	1503	3061
330.art_m	6400	551	11618	444	14408
332.ammp_m	7000	2481	2821	2496	2804

<p><b>Hardware</b></p> <p>CPU: POWER5  CPU MHz: 1650  FPU: Integrated  CPU(s) enabled: 2 cores, 1 chip, 2 cores/chip (SMT on)  CPU(s) orderable: 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: 8x4 GB  Disk Subsystem: 1x36GB SCSI, 15K RPM  Other Hardware:</p>	<p><b>Software</b></p> <p>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: IBM Engineering and Scientific Subroutine Library for AIX, Version 4 Release 2  File System: AIX/JFS2  System State: Multi-user</p>
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## Notes/Tuning Information

Tested by IBM

### Portability Flags & Environment Variables

```

Linker flag: -bmaxdata:0x80000000 used in all ca
-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
Linker flag: -bmaxdata:0xD0000000 used in 330.art_m (for base and peak)

```

### Base Flags

```

C: -q64 -O5 -qalign=natural -qipa=partition=large -qmaxmem=-1 -qsmp=omp
FORTRAN:-O5 -qipa=partition=large -qmaxmem=-1 -qsmp=omp

```

### Base & Peak User Environment:

```

OMP_NUM_THREADS=4
OMP_DYNAMIC=FALSE
ENV_XLSMPOPTS=SPINS=0:YIELDS=0:STACK=800000:SCHEDULE=STATIC
MALLOCMULTIHEAP=1

```

### Peak Flags

```

-qsmp=omp used in all cases
310.wupwise_m: basepeak=1
312.swim_m: -O5 -qtune=pwr5 -qarch=pwr5

```



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## Notes/Tuning Information (Continued)

```

314.mgrid_m: basepeak=1
316.applu_m: -O5 -qtune=pwr5 -qarch=pwr5
318.galgel_m: basepeak = 1
320.quake_m: -q64 -O5 -qalign=natural -qhot=arraypad -Q
324.apsi_m: basepeak=1
326.gafort_m: -O5 -qhot=arraypad -qipa=partition=large -qmaxmem=-1
328.fma3d_m: -O5 -qhot=arraypad -qipa=noobject
              -qipa=partition=large -qmaxmem=-1
330.art_m:    -qpdf1/pdf2
              -q64 -O5 -blpdata -qalign=natural -qhot=arraypad -Q
332.ammp_m:  -q64 -O5 -qalign=natural -qhot=arraypad -Q

```

### 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:

SPEC OMPL2001 source for 32bit systems modified for SPEC OMPM2001 used  
with 312.swim\_m, 316.applu\_m, 320.quake\_m, 326.gafort\_m.

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)

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=400 -o lpgg_size=16777216 -o memory_affinity=1
chuser capabilities=CAP_BYPASS_RAC_VMM,CAP_PROPAGATE $USER
reboot -q
export MEMORY_AFFINITY=MCM

```