



# OMPM2001 Result

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IBM Corporation  
IBM eServer p5 575 (1900 MHz, 8 CPU)

SPECompMpeak2001 = 28035  
SPECompMbase2001 = 24805

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

Benchmark	Reference Time	Base Runtime	Base Ratio	Peak Runtime	Peak Ratio	
310.wupwise_m	6000	176	34155	176	34155	
312.swim_m	6000	215	27906	179	33555	
314.mgrid_m	7300	505	14469	391	18650	
316.applu_m	4000	95.2	42016	90.6	44166	
318.galgel_m	5100	133	38397	110	46229	
320.earthquake_m	2600	215	12090	113	23097	
324.apsi_m	3400	144	23582	141	24151	
326.gafort_m	8700	280	31055	279	31143	
328.fma3d_m	4600	323	14224	324	14206	
330.art_m	6400	117	54711	117	54711	
332.ammp_m	7000	490	14272	490	14272	

### Hardware

CPU: POWER5  
 CPU MHz: 1900  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 8 chips, 1 core/chip (SMT on)  
 CPU(s) orderable: 8  
 Primary Cache: 64KBI+32KBD (on chip)/core  
 Secondary Cache: 1920KB unified (on chip)/chip  
 L3 Cache: 36MB unified (off-chip)/DCM, 8 DCM/SUT  
 Other Cache: None  
 Memory: 32 GB  
 Disk Subsystem: 2x36GB SCSI, 15K RPM  
 Other Hardware: None

### Software

OpenMP Threads: 16  
 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

Tested by IBM

### 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

### Base & Peak User Environment:

OMP\_NUM\_THREADS=16  
 OMP\_DYNAMIC=FALSE  
 XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:SCHEDULE=STATIC:STARTPROC=0:STRIDE=2  
 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



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## Notes/Tuning Information (Continued)

```

314.mgrid_m:      -O5 -q64 -qipa=partition=large
316.applu_m:      -q64 -O4 -qhot -qmaxmem=-1
318.galgel_m:     -q64 -O5 -qessl -lesslsmp
320.equake_m:     -qpdf1/pdf2
                  -q64 -O5 -qessl -lesslsmp
324.apsi_m:       -qpdf1/pdf2
                  q64 -O5 -blpdata -qalign=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:        basepeak=1
332.ammp_m:       basepeak=1

```

### 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 OMP2001 source for 32bit systems modified for SPEC OMPM2001 used  
 with 312.swim\_m, 316.applu\_m, 320.equake\_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)  
 For the 575, only one core is active per 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

```