



# OMPM2001 Result

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## IBM Corporation

IBM eServer pSeries 650 Model 6M2 (1450 MHz, 8 CPU)

SPECompMpeak2001 = 9694

SPECompMbase2001 = 9458

SPEC license #HPG0005 | Tested by: IBM | Test site: Austin, TX | Test date: Nov-2002 | Hardware Avail: Dec-2002 | Software Avail: Feb-2003

Benchmark	Reference Time	Base Runtime	Base Ratio	Peak Runtime	Peak Ratio	
310.wupwise_m	6000	482	12446	482	12446	
312.swim_m	6000	631	9504	616	9742	
314.mgrid_m	7300	1096	6658	1096	6658	
316.applu_m	4000	443	9026	358	11176	
318.galgel_m	5100	386	13220	375	13610	
320.earthquake_m	2600	223	11666	224	11624	
324.apsi_m	3400	275	12378	275	12378	
326.gafort_m	8700	895	9720	895	9720	
328.fma3d_m	4600	712	6460	706	6511	
330.art_m	6400	500	12797	500	12797	
332.ammp_m	7000	1410	4966	1410	4966	

### Hardware

CPU: POWER4+  
 CPU MHz: 1450  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 4 chips, 2 cores/chip, 1 chip/SCM  
 CPU(s) orderable: 1,2,3,4 (order by # SCM)  
 Primary Cache: 64KBI+32KBD (on chip)/core  
 Secondary Cache: 1536KB unified (on chip)/chip  
 L3 Cache: 32MB unified (off chip)/SCM, 4 SCM in SUT  
 Other Cache: None  
 Memory: 4x8x2 = 64 GB  
 Disk Subsystem: 1x18.2 GB SCSI  
 Other Hardware: None

### Software

OpenMP Threads: 8  
 Parallel: OpenMP  
 Operating System: AIX 5L V5.2  
 Compiler: XL Fortran for AIX, Version 8.1 PTF 2  
 IBM C for AIX, Version 6.0 PTF 2  
 Other Software: ESSL 3.3, MASS 3.0  
 File System: AIX/JFS  
 System State: Multi-user

## Notes/Tuning Information

Tested by IBM

### Portability Flags & Environment Variables

-qfixed used in: wupwise\_m, swim\_m, mgrid\_m, applu\_m, apsi\_m  
 -qfixed=80 used in: galgel\_m  
 -qsuffix=f=f90 used in: galgel\_m, gafort\_m, fma3d\_m  
 ENV\_XLFRTEOPTS=NAMELIST=OLD used in: gafort\_m

### Base Flags

C: -O5 -qalign=natural -qipa=partition=large -qmaxmem=-1  
 -bmaxdata:0x80000000 -qsmp=omp  
 FORTRAN: -O5 -qalign=natural -qipa=partition=large -qmaxmem=-1  
 -bmaxdata:0x80000000 -qsmp=omp

### Base & Peak User Environment:

OMP\_NUM\_THREADS=8  
 OMP\_DYNAMIC=FALSE  
 XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:SCHEDULE=STATIC  
 MALLOCMULTIHEAP=1

### Peak Flags

-bmaxdata:0x80000000 used in all cases  
 -qsmp=omp used in all cases



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## Notes/Tuning Information (Continued)

```
swim_m:      -O3 -qalign=natural -qtune=pwr4 -qarch=pwr4
applu_m:     -O3 -qalign=natural -qtune=pwr4 -qarch=pwr4
galgel_m:    -O5 -qalign=natural -qhot=arraypad -qessl -qlibessl -lesslsmp -lpesslsmp
             -lblacssmp -lmass -qipa=partition=large -qmaxmem=-1
equake_m:    -O5 -qalign=natural -qhot=arraypad
fma3d_m:     -O5 -qalign=natural -qhot=arraypad -qipa=noobject -qipa=partition=large
             -qmaxmem=-1
```

SCM: Acronym for "Single-Chip Module"

SUT: Acronym for "System Under Test"

C: IBM VAC++ invoked as xlc\_r

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

APAR IY 35693 was applied to AIX to enable new hardware support.

ulimits set to unlimited.

Memory affinity was set as follows:

```
vmo -r -o memory_affinity=1
```

```
shutdown -r
```

```
export MEMORY_AFFINITY=MCM
```