



OMP2001 Result

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IBM Corporation

IBM eServer pSeries 650 Model 6M2 (1450 MHz, 4 CPU)

SPECompMpeak2001 = 5526

SPECompMbase2001 = 5294

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	920	6525	920	6525	
312.swim_m	6000	1170	5127	1135	5286	
314.mgrid_m	7300	2174	3358	2174	3358	
316.applu_m	4000	805	4971	570	7017	
318.galgel_m	5100	494	10328	472	10805	
320.earthquake_m	2600	355	7329	347	7482	
324.apsi_m	3400	524	6488	524	6488	
326.gafort_m	8700	1740	5001	1714	5075	
328.fma3d_m	4600	1337	3441	1335	3446	
330.art_m	6400	916	6984	904	7078	
332.ammp_m	7000	2521	2776	2519	2779	

Hardware

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

Software

OpenMP Threads: 4
 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=4
 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
 312.swim_m: -O3 -qalign=natural -qtune=pwr4 -qarch=pwr4



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Notes/Tuning Information (Continued)

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314.mgrid_m: basepeak=true
316.applu_m: -O3 -qalign=natural -qtune=pwr4 -qarch=pwr4
318.galgel_m: -O5 -qalign=natural -qhot=arraypad -qessl -qlibessl -lesslsmp
               -lpesslsmp -lblacssmp -lmass -qipa=partition=large -qmaxmem=-1
320.equake_m: -O5 -qalign=natural -qhot=arraypad -Q
324.apsi_m: basepeak=true
326.gafort_m: basepeak=true
328.fma3d_m: -O5 -qalign=natural -qhot=arraypad -qipa=noobject
               -qipa=partition=large -qmaxmem=-1
330.art_m: -O5 -qalign=natural -qhot=arraypad -Q
332.amm_p_m: -O5 -qalign=natural -qhot=arraypad -Q

```

Peak sources:

318.galgel: eigQR.f90 (for portability to lapack version 3).
 Available as SPEC OMP2001 Source: omp2001-galgel-20020117.tar.gz.

SPEC OMPL2001 source for 32bit systems modified for SPEC OMPM2001.
 Available as SPEC OMPM2001 Source: ompm2001-srcl32bit-20020925.tar.gz.
 For 312.swim_m, 316.applu_m, 320.equake_m, 326.gafort_m, 330.art_m,
 332.amm_p_m.

SCM: Acronym for "Single-Chip Module"

SUT: Acronym for "System Under Test"

The 4-way pSeries 650 machine contains 2 CPU boards.
 L3-caches set to PRIVATE mode through the configuration menu.

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

```