



OMPM2001 Result

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IBM Corporation
IBM eServer p5 595 (1900 MHz, 64 CPU)

SPECompMpeak2001 = 92979
SPECompMbase2001 = 81677

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

Benchmark	Reference Time	Base Runtime	Base Ratio	Peak Runtime	Peak Ratio	
310.wupwise_m	6000	37.0	162164	37.0	162164	
312.swim_m	6000	47.6	126176	35.8	167686	
314.mgrid_m	7300	50.1	145741	50.1	145741	
316.applu_m	4000	25.6	156317	23.8	168229	
318.galgel_m	5100	147	34588	138	37056	
320.quake_m	2600	68.1	38183	50.4	51549	
324.apsi_m	3400	37.4	90956	33.9	100187	
326.gafort_m	8700	97.7	89055	66.5	130886	
328.fma3d_m	4600	87.7	52461	84.9	54183	
330.art_m	6400	62.0	103167	62.1	102981	
332.ammp_m	7000	175	39988	145	48183	

Hardware

CPU: POWER5
 CPU MHz: 1900
 FPU: Integrated
 CPU(s) enabled: 64 cores, 32 chips, 2 cores/chip (SMT on)
 CPU(s) orderable: 16,24,32,40,48,56,64
 Primary Cache: 64KBI+32KBD (on chip)/core
 Secondary Cache: 1920KB unified (on chip)/chip
 L3 Cache: 144MB unified (off-chip)/MCM, 8 MCM/SUT
 Other Cache: None
 Memory: 256 GB DDR2
 Disk Subsystem: 3x36GB SCSI, 15K RPM
 Other Hardware: None

Software

OpenMP Threads: 120
 Parallel: OpenMP
 Operating System: AIX 5L V5.3
 Compiler: XL C/C++ Enterprise Edition V7.0 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 -qsmp=omp
 FORTRAN: -q64 -O5 -lmass -qsmp=omp

Base & Peak User Environment:

OMP_NUM_THREADS=64
 OMP_DYNAMIC=FALSE
 ENV_XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:SCHEDULE=STATIC:STARTPROC=0:STRIDE=2
 MALLOCMULTIHEAP=1

Peak Flags:

-qsmp=omp used in all cases
 310.wupwise_m: basepeak=1
 312.swim_m: -q64 -O3 -qarch=pwr3 -qtune=pwr3
 EXTRA_LDFLAGS=-q64



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Notes/Tuning Information (Continued)

```

314.mgrid_m:      basepeak=1
316.applu_m:      -q64 -O3 -qarch=pwr4 -qtune=pwr4
                  EXTRA_LDFLAGS=-q64
                  ENV_OMP_NUM_THREADS=120
318.galgel_m:     -O5 -qhot=arraypad -qipa=noobject -qipa=partition=large -qmaxmem=-1
                  EXTRA_LDFLAGS=-bmaxdata:0x80000000
                  ENV_OMP_NUM_THREADS=60
320.equake_m:     -qpdf1/pdf2
                  -q64 -O5 -blpdata -qalign=natural -qhot=arraypad -Q
325.apsi_m:       -q64 -O3 -qarch=pwr4 -qtune=pwr4
                  EXTRA_LDFLAGS=-q64
                  ENV_OMP_NUM_THREADS=120
326.gafort_m:     -O5 -qhot=arraypad -qipa=noobject -qipa=partition=large -qmaxmem=-1
                  EXTRA_LDFLAGS=-bmaxdata:0x80000000
328.fma3d_m:      -O5 -qmaxmem=-1
                  EXTRA_LDFLAGS=-bmaxdata:0x80000000
330.art_m:        -qpdf1/pdf2
                  -q64 -O5 -lmass
                  EXTRA_CFLAGS= -DINTS_PER_CACHELINE=32 -DDBLS_PER_CACHELINE=16
332.amp_m:        -qpdf1/pdf2
                  -q64 -O5 -blpdata -qalign=natural -qhot=arraypad -Q
                  ENV_OMP_NUM_THREADS=120

```

Alternate sources:

Required srcalt=purdue1 is applied to 330.art_m (base & peak) for correctness.

Peak sources:

Optional SPEC OMPL2001 source for 32bit systems (modified for SPEC OMP2001) was

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

SUT: Acronym for "System Under Test"

MCM: Acronym for "Multi-Chip Module" (four dual-core processor chips + four L3-cache chips)

ESSL: Engineering and Scientific Subroutine Library

C: IBM XL C for AIX invoked as xlc_r

Fortran: IBM XL Fortran for AIX invoked as xlf90_r

APAR IY60349 was applied to AIX to enable new hardware support.

ulimits set to unlimited.

Large page mode and memory affinity were set as follows:

```

vmo -r -o lpgg_regions=7000 -o lpgg_size=16777216 -o memory_affinity=1
chuser capabilities=CAP_BYPASS_RAC_VMM,CAP_PROPAGATE $USER
shutdown -r
export MEMORY_AFFINITY=MCM

```

For a description of IBM's compiler flags, portability flags, and system parameters used to generate this result, please refer to the IBM-20041019-AIX.txt file in the flags directory.