



OMPM2001 Result

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IBM Corporation
IBM eServer p5 570 (1900 MHz, 16 CPU)

SPECompMpeak2001 = 38282
SPECompMbase2001 = 37444

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

Benchmark	Reference Time	Base Runtime	Base Ratio	Peak Runtime	Peak Ratio	
310.wupwise_m	6000	89.0	67419	89.0	67419	
312.swim_m	6000	139	43207	135	44433	
314.mgrid_m	7300	351	20799	351	20799	
316.applu_m	4000	59.1	67673	56.1	71319	
318.galgel_m	5100	154	33122	154	33122	
320.earthquake_m	2600	112	23247	99.1	26231	
324.apsi_m	3400	92.7	36664	92.7	36664	
326.gafort_m	8700	173	50216	168	51866	
328.fma3d_m	4600	198	23189	198	23252	
330.art_m	6400	76.0	84248	75.2	85143	
332.ammp_m	7000	392	17864	393	17805	

Hardware

CPU: POWER5
 CPU MHz: 1900
 FPU: Integrated
 CPU(s) enabled: 16 cores, 8 chips, 2 cores/chip (SMT on)
 CPU(s) orderable: 2,4,8,12,16
 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: 64x1 GB DDR2
 Disk Subsystem: 1x36GB SCSI, 15K RPM
 Other Hardware:

Software

OpenMP Threads: 32
 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

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=32
 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)

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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

```