OMPM2001 Result

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IBM Corporation

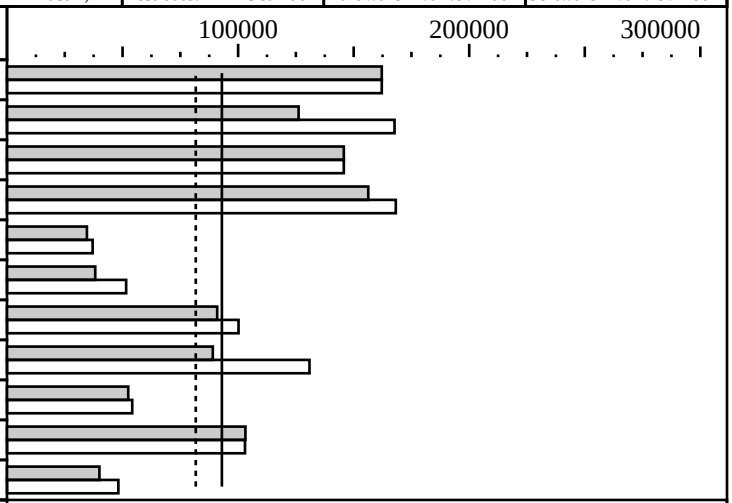
IBM eServer p5 595 (1900 MHz, 64 CPU)

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.equake_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

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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)

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 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.ammp_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 OMPM2001) 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 lgpg_regions=7000 -o lgpg_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.
```