OMPM2001 Result

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IBM Corporation

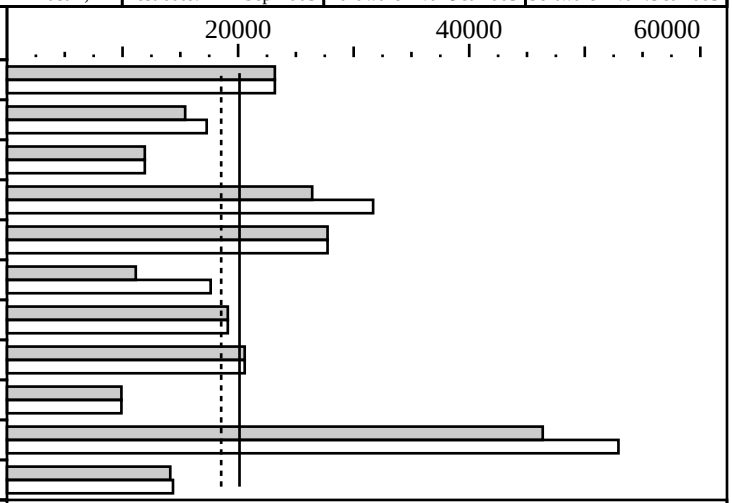
IBM System p5 550Q (1500 MHz, 8 CPU)

SPECompMpeak2001 = 20122

SPECompMbase2001 = 18536

SPEC license #: HPG0005 | Tested by: IBM | Test site: Austin, TX | Test date: Sep-2005 | Hardware Avail: Oct-2005 | Software Avail: Oct-2005

Benchmark	Reference Time	Base Runtime	Base Ratio	Peak Runtime	Peak Ratio
310.wupwise_m	6000	259	23180	259	23180
312.swim_m	6000	389	15419	347	17281
314.mgrid_m	7300	612	11926	612	11926
316.applu_m	4000	151	26411	126	31684
318.galgel_m	5100	184	27741	184	27741
320.equake_m	2600	233	11145	148	17626
324.apsi_m	3400	178	19109	178	19109
326.gafort_m	8700	423	20571	423	20571
328.fma3d_m	4600	465	9902	465	9902
330.art_m	6400	138	46362	121	52914
332.ammp_m	7000	495	14129	487	14364



Hardware

CPU:	POWER5+
CPU MHz:	1900
FPU:	Integrated
CPU(s) enabled:	8 cores, 4 chips, 2 cores/chip (SMT on)
CPU(s) orderable:	4,8
Primary Cache:	64KBI+32KBD (on chip)
Secondary Cache:	1920KB unified (on chip)
L3 Cache:	2x36MB unified (off-chip)/QCM, 2 QCM/SUT
Other Cache:	None
Memory:	16x4GB
Disk Subsystem:	1x73GB SCSI, 15K RPM
Other Hardware:	None

Software

OpenMP Threads:	16
Parallel:	OpenMP
Operating System:	AIX 5L V5.3
Compiler:	XL C/C++ Enterprise Edition Version 8.0 for AIX XL Fortran Enterprise Edition Version 10.1 for AIX Other Software: ESSL 4.2.0.2
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 -blpdata -qalign=natural -qhot=arraypad -Q -qsmp=omp
            EXTRA_LDFLAGS=-q64
   FORTRAN: -O5 -qipa=noobject -qmaxmem=-1 -qsmp=omp
            EXTRA_LDFLAGS=-bmaxdata:0x80000000

 Base & Peak User Environment:
   OMP_NUM_THREADS=16
   OMP_DYNAMIC=FALSE
   XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:SCHEDULE=STATIC:STARTPROC=0:STRIDE=1
   MALLOCMULTIHEAP=1

 Peak Flags:
   -qsmp=omp used in all cases
   310.wupwise_m:    basepeak=1
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Notes/Tuning Information (Continued)

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312.swim_m:       XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:SCHEDULE=STATIC:STARTPROC=0:STRIDE=2
                     OMP_NUM_THREADS=8
                     -O5 -blpdata -lmass
                     EXTRA_LDFLAGS=-bmaxdata:0x80000000
 314.mgrid_m:        basepeak=1
 316.applu_m:        -O5 -blpdata -lmass
                     EXTRA_LDFLAGS=-bmaxdata:0x80000000
 318.galgel_m:     XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:SCHEDULE=STATIC:STARTPROC=0:STRIDE=2
                     OMP_NUM_THREADS=8
                     basepeak=1
 320.equake_m:     XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:SCHEDULE=STATIC:STARTPROC=0:STRIDE=2
                     OMP_NUM_THREADS=8
                     -O5 -lesslsmp
                     EXTRA_LDFLAGS=-bmaxdata:0x80000000
 325.apsi_m:         basepeak=1
 326.gafort_m:       basepeak=1
 328.fma3d_m:        basepeak=1
 330.art_m:          -qpdf1/pdf2
                     -O5 -blpdata -qalign=natural
                     EXTRA_LDFLAGS=-bmaxdata:0x80000000
 332.ammp_m:         -qpdf1/pdf2
                     -O5 -blpdata -qfdpr -qalign=natural
                     fdpr -q -O3
                     EXTRA_LDFLAGS=-bmaxdata:0x80000000


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.equake_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)
QCM:  Acronym for "Quad-Core Module" (two dual-core processor chips + two L3-cache chips)
ESSL: Engineering and Scientific Subroutine Library
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, memory affinity, and shared-memory pinning were set as follows:
   vmo -r -o lgpg_regions=1600 -o lgpg_size=16777216 -o v_pinshm=1
   chuser capabilities=CAP_BYPASS_RAC_VMM,CAP_PROPAGATE $USER
   shutdown -r
   export MEMORY_AFFINITY=MCM
The default number of executing threads is set as follows:
   export OMP_NUM_THREADS=16

Use flags-description file IBM-20051013-AIX.txt.
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Notes/Tuning Information (Continued)