



OMPM2001 Result

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IBM Corporation

IBM Power 730 Express (3.72 GHz, 12 core, RedHat)

SPECompMpeak2001 = 80952

SPECompMbase2001 = 65377

SPEC license #HPG0005 | Tested by: IBM | Test site: Austin, TX | Test date: Jan-2011 | Hardware Avail: Sep-2010 | Software Avail: Nov-2010

Benchmark	Reference Time	Base Runtime	Base Ratio	Peak Runtime	Peak Ratio
310.wupwise_m	6000	63.9	93899	63.9	93899
312.swim_m	6000	81.2	73885	74.6	80386
314.mgrid_m	7300	103	70545	83.2	87752
316.applu_m	4000	44.7	89436	35.3	113456
318.galgel_m	5100	120	42453	75.3	67758
320.quake_m	2600	58.4	44512	28.0	93021
324.apsi_m	3400	50.2	67769	47.8	71163
326.gafort_m	8700	161	54117	123	70979
328.fma3d_m	4600	104	44247	104	44247
330.art_m	6400	30.6	208925	29.1	219684
332.ammp_m	7000	210	33257	166	42071

Hardware

CPU: POWER7
 CPU MHz: 3724
 FPU: Integrated
 CPU(s) enabled: 12 cores, 2 chips, 6 cores/chip, 4 threads/core
 CPU(s) orderable: 12 cores
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 256 KB I+D on chip per core
 L3 Cache: 4 MB I+D on chip per core
 Other Cache: None
 Memory: 64 GB (16x4 GB) DDR3 1066 MHz
 Disk Subsystem: 2x146.8 GB SAS SFF 15K RPM
 Other Hardware: None

Software

OpenMP Threads: 48
 Parallel: OpenMP
 Operating System: Red Hat Enterprise Linux Server release 6.0 (ppc64), Kernel 2.6.32-71.el6.ppc64
 Compiler: IBM XL C/C++ for Linux, V11.1 Updated with the Nov2010 PTF
 IBM XL Fortran for Linux, V13.1 Updated with the Nov2010 PTF
 Other Software: IBM Engineering and Scientific Subroutine Library for Linux on POWER, Version 5.1
 File System: ext3
 System State: Run level 3 (multi-user)

Notes/Tuning Information

Portability Flags 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: -O5 -q64 -qhot=arraypad -Q -qsmp=omp
 FORTRAN: -O5 -q64 -qhot=arraypad -Q -qsmp=omp

Base & Peak Environment Flags:

OMP_NUM_THREADS = 24
 OMP_DYNAMIC=FALSE
 XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:PROCS=0,1,4,5,8,9,12,13,16,17,20,21,24,25,28,29,32,33,36,37,40,41,44,45
 XLFRTEOPTS=intrinthds=1

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

Peak Flags



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Notes/Tuning Information (Continued)

-qsmp=omp used in all cases

```

310.wupwise_m: basepeak=1
312.swim_m:      -O3 -q32 -qpdf1/pdf2
                XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=4
                OMP_NUM_THREADS = 12
314.mgrid_m:    -O5 -q64 -qhot=arraypad
                XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=4
                OMP_NUM_THREADS = 12
316.applu_m:    -O3 -q32 -qpdf1/pdf2
                -B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-link=BDT
                XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=1
                OMP_NUM_THREADS = 48
318.galgel_m:   -O5 -q64 -qessl
                XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:PROCS=0,4,8,12,16,20,24,28
                OMP_NUM_THREADS = 6
                EXTRA_LIBS=-lesslsm
320.equake_m:   -O5 -q64 -qpdf1/pdf2
                XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=4
                OMP_NUM_THREADS = 12
324.apsi_m:     -O5 -q64
326.gafort_m:   -O5 -q32 -qhot=arraypad
                XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=1
                OMP_NUM_THREADS = 48
328.fma3d_m:    basepeak=1
330.art_m:      -O5 -q64 -qhot=arraypad -Q -qpdf1/pdf2
                XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=1
                OMP_NUM_THREADS = 48
332.ampm_m:     -O5 -q32 -qhot=arraypad -Q
                HUGETLB_MORECORE=yes
                LD_PRELOAD=libhugetlbfs.so

```

C: IBM XL C for Linux invoked as xlc_r
Fortran 90: IBM XL Fortran for Linux invoked as xlf90_r

Use flags-description file IBM-20100816-Linux.txt

ulimit -s (stack) set to 1048576.

Large pages reserved as follows by root user:

```
echo 480 > /proc/sys/vm/nr_hugepages
```

System configured with libhugetlbfs library for application access to large pages

Intelligent Energy Optimization enabled, up to 3.92 GHz