



# OMPM2001 Result

Copyright 1999-2008, Standard Performance Evaluation Corporation

IBM Corporation  
IBM Power 730 Express (3.55 GHz, 16 core, SLES)

SPECompMpeak2001 = 94267  
SPECompMbase2001 = 75918

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

Benchmark	Reference Time	Base Runtime	Base Ratio	Peak Runtime	Peak Ratio	
310.wupwise_m	6000	50.6	118510	50.6	118510	
312.swim_m	6000	82.2	73022	75.6	79372	
314.mgrid_m	7300	97.9	74600	85.0	85920	
316.applu_m	4000	26.9	148659	23.3	171803	
318.galgel_m	5100	131	39036	72.0	70859	
320.quake_m	2600	57.3	45390	25.7	101016	
324.apsi_m	3400	41.4	82173	38.8	87584	
326.gafort_m	8700	145	60196	118	73654	
328.fma3d_m	4600	89.7	51256	89.7	51256	
330.art_m	6400	26.0	246106	22.5	284291	
332.ammp_m	7000	154	45506	125	55908	

### Hardware

CPU: POWER7  
 CPU MHz: 3556  
 FPU: Integrated  
 CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip, 4 threads/core  
 CPU(s) orderable: 16 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: 128 GB (16x8 GB) DDR3 1066 MHz  
 Disk Subsystem: 2x146.8 GB SAS SFF 15K RPM  
 Other Hardware: None

### Software

OpenMP Threads: 64  
 Parallel: OpenMP  
 Operating System: SUSE Linux Enterprise Server 11 SP1 (ppc64)  
 Kernel 2.6.32.12-0.7-ppc64  
 Compiler: IBM XL C/C++ for Linux, V11.1  
 IBM XL Fortran for Linux, V13.1  
 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 (unless noted differently below):

OMP\_NUM\_THREADS = 32  
 OMP\_DYNAMIC=FALSE  
 XL SMP\_OPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:PROCS=0,1,4,5,8,9,12,13,16,17,20,21,24,25,28,29,32,33,36,37,40,41,44,45,48,49,52,53,56,57,60,61  
 XL FRTE\_OPTS=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



# OMPM2001 Result

Copyright 1999-2008, Standard Performance Evaluation Corporation

IBM Corporation  
IBM Power 730 Express (3.55 GHz, 16 core, SLES)

SPECompMpeak2001 = 94267  
SPECompMbase2001 = 75918

SPEC license #HPG0005 Tested by: IBM Test site: Austin, TX Test date: Jul-2010 Hardware Avail: Sep-2010 Software Avail: Oct-2010

## 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 = 16
314.mgrid_m:       -O5 -q64 -qhot=arraypad
                   XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=4
                   OMP_NUM_THREADS = 16
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 = 64
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 = 8
                   EXTRA_LIBS=-lesslsm
320.equake_m:      -O5 -q64 -qpdf1/pdf2
                   XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=4
                   OMP_NUM_THREADS = 16
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 = 64
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 = 64
332.ampp_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 3.86 GHz