



# OMPM2001 Result

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**IBM Corporation**  
IBM Power 750 Express (3.55 GHz, 32 core, SLES)

SPECompMpeak2001 = 104175  
SPECompMbase2001 = 92957

SPEC license #HPG0005 | Tested by: IBM Corporation | Test site: Austin, TX | Test date: Jan-2010 | Hardware Avail: Feb-2010 | Software Avail: Dec-2009

Benchmark	Reference Time	Base Runtime	Base Ratio	Peak Runtime	Peak Ratio	
310.wupwise_m	6000	39.6	151439	39.6	151439	
312.swim_m	6000	52.3	114670	45.5	131911	
314.mgrid_m	7300	57.3	127503	57.3	127503	
316.applu_m	4000	25.4	157302	21.5	185645	
318.galgel_m	5100	151	33681	140	36445	
320.quake_m	2600	32.9	79092	26.1	99722	
324.apsi_m	3400	31.8	106856	31.8	106856	
326.gafort_m	8700	115	75808	92.1	94505	
328.fma3d_m	4600	83.4	55185	83.4	55185	
330.art_m	6400	29.6	216341	21.1	303192	
332.ammp_m	7000	140	49907	130	54008	

### Hardware

CPU: POWER7  
 CPU MHz: 3550  
 FPU: Integrated  
 CPU(s) enabled: 32 cores, 4 chips, 8 cores/chip, 4 threads/core  
 CPU(s) orderable: 8,16,24,32 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: 256 GB (32x8 GB) DDR3 1066 MHz  
 Disk Subsystem: 8x146.8 GB SAS SFF 15K RPM  
 Other Hardware: None

### Software

OpenMP Threads: 128  
 Parallel: OpenMP  
 Operating System: SUSE Linux Enterprise Server 11 (ppc64)  
 Kernel 2.6.27.19-5-ppc64  
 Compiler: IBM XL C/C++ for Linux, V10.1  
 Updated with the Oct2009 PTF  
 IBM XL Fortran for Linux, V12.1  
 Updated with the Oct2009 PTF  
 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 -qsmp=omp  
 FORTRAN: -O5 -q64 -qsmp=omp

### Base & Peak Environment Flags (unless noted differently below):

ENV\_OMP\_NUM\_THREADS = 32  
 ENV\_OMP\_DYNAMIC=FALSE  
 ENV\_XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=4  
 ENV\_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: -O4 -q64

314.mgrid\_m: basepeak = 1

316.applu\_m: -O4 -q32

ENV\_HUGETLB\_MORECORE=yes

ENV\_LD\_PRELOAD=libhugetlbfs.so

318.galgel\_m: -O4 -q64

-B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-link=BDT

320.equake\_m: -O5 -q64 -qhot=arraypad -Q

324.apsi\_m: basepeak = 1

326.gafort\_m: -O4 -q32 -qhot=arraypad

-B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-link=BDT

ENV\_OMP\_NUM\_THREADS = 128

ENV\_XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=1

328.fma3d\_m: basepeak = 1

330.art\_m: -O3 -q32

ENV\_HUGETLB\_MORECORE=yes

ENV\_LD\_PRELOAD=libhugetlbfs.so

332.ammp\_m: -O5 -q32

ENV\_HUGETLB\_MORECORE=yes

ENV\_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-20080408-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

System configured with:

echo "NO\_NEW\_FAIR\_SLEEPERS" > /sys/kernel/debug/sched\_features

Intelligent Energy Optimization enabled, up to 3.86 GHz