



# OMPM2001 Result

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## IBM

IBM HS22 Blade servers (Intel Xeon X5570, 2.93 GHz)

SPECompMpeak2001 = 44792

SPECompMbase2001 = 43657

SPEC license #PG3440A Tested by: Indiana University Test site: -- Test date: Apr-2009 Hardware Avail: Apr-2009 Software Avail: Jan-2009

Benchmark	Reference Time	Base Runtime	Base Ratio	Peak Runtime	Peak Ratio	
310.wupwise_m	6000	84.3	71175	83.1	72213	
312.swim_m	6000	160	37393	161	37347	
314.mgrid_m	7300	210	34777	208	35081	
316.applu_m	4000	126	31718	127	31416	
318.galgel_m	5100	117	43597	116	43825	
320.earthquake_m	2600	54.4	47832	50.1	51888	
324.apsi_m	3400	86.1	39508	85.9	39601	
326.gafort_m	8700	164	53144	169	51553	
328.fma3d_m	4600	150	30680	141	32707	
330.art_m	6400	64.7	98915	59.9	106797	
332.ammp_m	7000	249	28149	232	30210	

### Hardware

CPU: Intel Xeon X5570  
 CPU MHz: 2934  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip (HT on)  
 CPU(s) orderable: 1-2 chips  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 256 KB I+D on chip per core  
 L3 Cache: 8 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 24 GB (6\*4GB DDR3-1333 RDIMMs)  
 Disk Subsystem: Shared Memory filesystem 12 GB, tmpfs  
 Other Hardware: None

### Software

OpenMP Threads: 16  
 Parallel: OpenMP  
 Operating System: RHEL5.3 (x86\_64) 2.6.18-128.1.6.el5  
 Kernel 2.6.18-128.1.6.el5  
 Compiler: Intel C/C++ Compiler 11.0.074  
 Intel Fortran Compiler 11.0.074  
 File System: tmpfs  
 System State: Multi-user, run level 3

## Notes/Tuning Information

`ulimit -s unlimited`  
 Removes limits on the maximum size of the automatically-extended stack region of the current process and each process it creates.

Compiler flags for base level optimization

`COPTIMIZE : -O3 -xhost -ipo -no-prec-div -unroll-loops0 -openmp`

`FOPTIMIZE : -O3 -xhost -ipo -no-prec-div -unroll-loops0 -openmp`

`F77OPTIMIZE : -O3 -xhost -ipo -no-prec-div -unroll-loops0 -openmp`

Environment:

`KMP_AFFINITY=disabled`

controls the binding of OpenMP threads to the physical processing units

`KMP_SCHEDULE=static,balanced`

used to fine tune the load balancing of parallel loops that are statically scheduled under OpenMP with no chunk size specification

`KMP_BLOCKTIME=infinite`

Sets the time, in milliseconds, that a thread should wait, after completing the execution of a parallel region, before sleeping.

`KMP_LIBRARY=throughput`

Selects the OpenMP run-time library

`KMP_STACKSIZE=31m`

Sets the number of bytes to allocate for each parallel thread to use as to use as its private stack

`OMP_NESTED=TRUE`

Standard Performance Evaluation Corporation

info@spec.org

http://www.spec.org



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## Notes/Tuning Information (Continued)

Enables (TRUE) or disables (FALSE) nested parallelism.  
OMP\_DYNAMIC=FALSE  
Enables (true) or disables (false) the dynamic adjustment of the number of threads.  
OMP\_NUM\_THREADS=16  
Sets the maximum number of threads to use for OpenMP\* parallel regions if no other value is specified in the program itself.  
Hyperthreading and turbo mode enabled.

318.galgel\_m portability flags:  
FFLAGS=-fixed -extend-source 132  
Flags for peak level optimization

310.wupwise\_m peak flags:  
fdo\_pre0 = rm -rf /\*.dyn  
PASS1\_FFLAGS = -prof-gen  
PASS2\_FFLAGS = -prof-use  
PASS1\_LDFLAGS = -prof-gen  
PASS2\_LDFLAGS = -prof-use

312.swim\_m peak flags:  
fdo\_pre0 = rm -rf /\*.dyn  
PASS1\_FFLAGS = -prof-gen  
PASS2\_FFLAGS = -prof-use  
PASS1\_LDFLAGS = -prof-gen  
PASS2\_LDFLAGS = -prof-use

316.aplu\_m peak flags:  
COPTIMIZE = -O2 -xhost -ipo -no-prec-div -openmp  
FOPTIMIZE = -O2 -xhost -ipo -no-prec-div -openmp  
F77OPTIMIZE = -O2 -xhost -ipo -no-prec-div -openmp

318.galgel\_m peak flags:  
ENV\_OMP\_NUM\_THREADS=8

320.equake\_m peak flags:  
ENV\_OMP\_NUM\_THREADS=8  
srcalt:ompl.32

324.apsi\_m peak flags:  
COPTIMIZE = -O2 -xhost -ipo -no-prec-div -openmp  
FOPTIMIZE = -O2 -xhost -ipo -no-prec-div -openmp  
F77OPTIMIZE = -O2 -xhost -ipo -no-prec-div -openmp

328.fma3d\_m peak flags:  
srcalt:ompl.32  
fdo\_pre0 = rm -rf /\*.dyn  
PASS1\_FFLAGS = -prof-gen  
PASS2\_FFLAGS = -prof-use  
PASS1\_LDFLAGS = -prof-gen  
PASS2\_LDFLAGS = -prof-use

330.art\_m peak flags:  
COPTIMIZE = -O2 -xhost -ipo -no-prec-div -openmp  
FOPTIMIZE = -O2 -xhost -ipo -no-prec-div -openmp  
F77OPTIMIZE = -O2 -xhost -ipo -no-prec-div -openmp

332.amp\_m peak flags:  
COPTIMIZE = -O2 -xhost -openmp  
FOPTIMIZE = -O2 -xhost -openmp  
F77OPTIMIZE = -O2 -xhost -openmp

For a description of the flags used, please see  
Indiana-ic11.0-intel64-linux-flags-file-20090428.html in the flags directory