### SPEC® CFP2006 Result

**IBM Corporation**

IBM BladeCenter HS21 (Intel Xeon E5450)  

<table>
<thead>
<tr>
<th>SPECfp®2006</th>
<th>SPECfp_base2006</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>23.0</strong></td>
<td><strong>19.3</strong></td>
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</tbody>
</table>

**CPU2006 license:** 11  
**Test sponsor:** IBM Corporation  
**Tested by:** IBM Corporation  
**CPU2006 license:** 11  
**Test date:** Dec-2007  
**Test date:** Dec-2007  
**Hardware Availability:** Jan-2008  
**Software Availability:** Nov-2007  

<table>
<thead>
<tr>
<th>Application</th>
<th>SPECfp®2006</th>
<th>SPECfp_base2006</th>
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<tbody>
<tr>
<td>410.bwaves</td>
<td>22.4</td>
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<tr>
<td>416.gamess</td>
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<tr>
<td>482.sphinx3</td>
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<td>27.2</td>
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</table>

**SPECfp®2006 = 23.0**

**Hardware**

- **CPU Name:** Intel Xeon E5450  
- **CPU Characteristics:** 1333MHz system bus  
- **CPU MHz:** 3000  
- **FPU:** Integrated  
- **CPU(s) enabled:** 8 cores, 2 chips, 4 cores/chip  
- **CPU(s) orderable:** 1.2 chips  
- **Primary Cache:** 32 KB I + 32 KB D on chip per core  
- **Secondary Cache:** 12 MB I+D on chip per chip, 6 MB shared / 2 cores

**Software**

- **Operating System:** SuSE Linux Enterprise Server 10 (x86_64), Kernel 2.6.16.21-0.8-smp  
- **Compiler:** Intel C++ and Fortran Compiler 10.1 for Linux  
- **Compiler Build:** 20070913 Package ID: l_cc_p_10.1.008, l_fc_p_10.1.008  
- **Auto Parallel:** Yes  
- **File System:** ReiserFS  
- **System State:** Multi-user, run level 3  
- **Base Pointers:** 64-bit

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CPU2006 license: 11
Test sponsor: IBM Corporation
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L3 Cache: None
Other Cache: None
Memory: 16 GB (8 x 2 GB DDR-5300F ECC)
Disk Subsystem: 1 x 36 GB SAS, 10000 RPM
Other Hardware: None

Peak Pointers: 32/64-bit
Other Software: Binutils 2.17.50.0.15

Results Table

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<th>Benchmark</th>
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<th>Seconds</th>
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</tr>
</tbody>
</table>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

General Notes

All benchmarks compiled in 64-bit mode except 450.soplex, 470.lbm and 482.sphinx3, at peak, are compiled in 32-bit mode
Hardware Sector Prefetch Enabled and Adjacent Sector Prefetch Enabled
OMP_NUM_THREADS set to number of cores
KMP_AFFINITY set to physical,0
KMP_STACKSIZE set to 200M

Base Compiler Invocation

C benchmarks:
icc

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Base Compiler Invocation (Continued)

C++ benchmarks:
icpc
Fortran benchmarks:
ifort
Benchmarks using both Fortran and C:
icc ifort

Base Portability Flags

410.bwaves: -DSPEC_CPU_LP64
416.gamess: -DSPEC_CPU_LP64
433.milc: -DSPEC_CPU_LP64
434.zeusmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
437.lesle3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealII: -DSPEC_CPU_LP64
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64 -nofor_main
454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:
-fast -parallel
C++ benchmarks:
-fast -parallel
Fortran benchmarks:
-fast -parallel
Benchmarks using both Fortran and C:
-fast -parallel
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Peak Compiler Invocation

C benchmarks (except as noted below):
    /opt/intel/cc/10.1.008/bin/icc -L/opt/intel/cc/10.1.008/lib
    -I/opt/intel/cc/10.1.008/include

433.milc: icc

C++ benchmarks (except as noted below):
    icpc

450.soplex: /opt/intel/cc/10.1.008/bin/icpc -L/opt/intel/cc/10.1.008/lib
    -I/opt/intel/cc/10.1.008/include

Fortran benchmarks:
    ifort

Benchmarks using both Fortran and C:
    icc ifort

Peak Portability Flags

410.bwaves: -DSPEC_CPU_LP64
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433.milc: -DSPEC_CPU_LP64
434.zeusmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealII: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:

433.milc: -prof-gen(pass 1) -prof-use(pass 2) -fast -fno-alias
        -auto-ilp32

470.lbm: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2
        -scalar-rep -prefetch -opt-malloc-options=3

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<table>
<thead>
<tr>
<th>Peak Optimization Flags (Continued)</th>
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<tbody>
<tr>
<td>482.sphinx3: -fast -unroll2</td>
</tr>
<tr>
<td>C++ benchmarks:</td>
</tr>
<tr>
<td>444.namd: -prof-gen(pass 1) -prof-use(pass 2) -fast -fno-alias -auto-ilp32</td>
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<tr>
<td>447.dealII: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -ansi-alias -scalar-rep-</td>
</tr>
<tr>
<td>450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -fast -opt-malloc-options=3</td>
</tr>
<tr>
<td>453.povray: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4 -ansi-alias</td>
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<td>Fortran benchmarks:</td>
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<tr>
<td>410.bwaves: -fast -prefetch -parallel</td>
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<tr>
<td>416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0 -ansi-alias -scalar-rep-</td>
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<tr>
<td>434.zeusmp: -prof-gen(pass 1) -prof-use(pass 2) -fast</td>
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<tr>
<td>437.leslie3d: basepeak = yes</td>
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<tr>
<td>459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0 -prefetch -parallel</td>
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<tr>
<td>465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4 -auto</td>
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<tr>
<td>Benchmarks using both Fortran and C:</td>
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<td>435.gromacs: -prof-gen(pass 1) -prof-use(pass 2) -fast -prefetch -auto-ilp32</td>
</tr>
<tr>
<td>436.cactusADM: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -prefetch -parallel -auto-ilp32</td>
</tr>
<tr>
<td>454.calculix: -fast -unroll-aggressive -auto-ilp32</td>
</tr>
<tr>
<td>481.wrf: -fast -parallel -prefetch -auto-ilp32</td>
</tr>
</tbody>
</table>

The flags file that was used to format this result can be browsed at [http://www.spec.org/cpu2006/flags/Intel-ic10.1-FP-intel64-linux-flags.20090714.11.html](http://www.spec.org/cpu2006/flags/Intel-ic10.1-FP-intel64-linux-flags.20090714.11.html)

You can also download the XML flags source by saving the following link: [http://www.spec.org/cpu2006/flags/Intel-ic10.1-FP-intel64-linux-flags.20090714.11.xml](http://www.spec.org/cpu2006/flags/Intel-ic10.1-FP-intel64-linux-flags.20090714.11.xml)
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For other inquiries, please contact webmaster@spec.org.

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