



SPEC[®] CFP2006 Result

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IBM Corporation

SPECfp[®]_rate2006 = 73.3

IBM BladeCenter HS21 XM (Intel Xeon E5440)

SPECfp_rate_base2006 = 64.9

CPU2006 license: 11

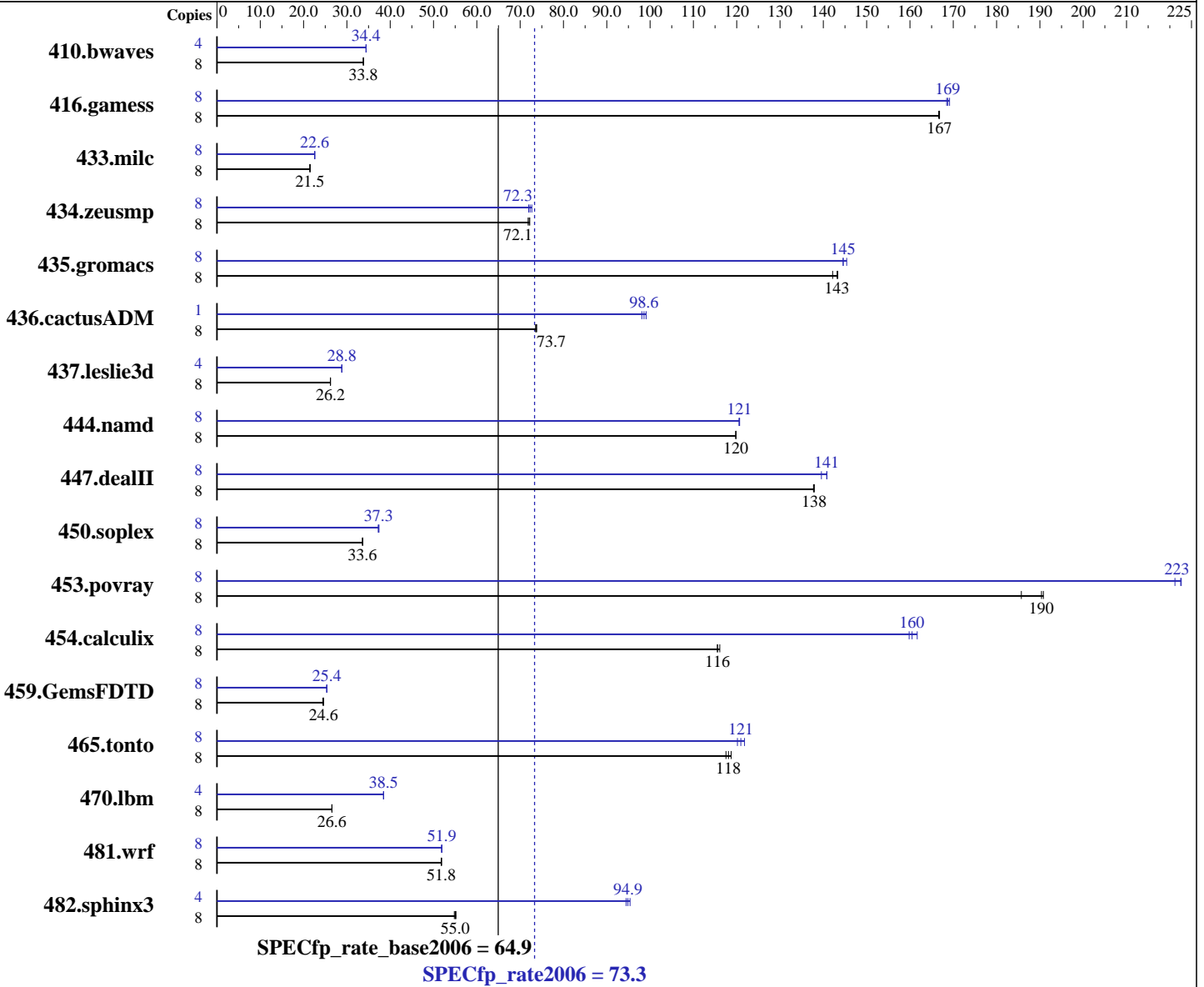
Test date: Dec-2007

Test sponsor: IBM Corporation

Hardware Availability: Jan-2008

Tested by: IBM Corporation

Software Availability: Nov-2007



Hardware

CPU Name: Intel Xeon E5440
 CPU Characteristics: 1333MHz system bus
 CPU MHz: 2833
 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

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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 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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L3 Cache: None
Other Cache: None
Memory: 16 GB (8 x 2 GB DDR2-5300F 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

Benchmark	Base								Peak							
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
410.bwaves	8	3214	33.8	<u>3215</u>	<u>33.8</u>	3218	33.8	4	<u>1579</u>	<u>34.4</u>	1579	34.4	1579	34.4		
416.gamess	8	<u>939</u>	<u>167</u>	940	167	939	167	8	<u>928</u>	<u>169</u>	926	169	930	168		
433.milc	8	3423	21.5	3416	21.5	<u>3418</u>	<u>21.5</u>	8	3254	22.6	<u>3253</u>	<u>22.6</u>	3253	22.6		
434.zeusmp	8	1008	72.2	1013	71.8	<u>1010</u>	<u>72.1</u>	8	<u>1007</u>	<u>72.3</u>	1001	72.7	1011	72.0		
435.gromacs	8	402	142	398	143	<u>399</u>	<u>143</u>	8	<u>395</u>	<u>145</u>	395	145	393	145		
436.cactusADM	8	1295	73.8	<u>1298</u>	<u>73.7</u>	1299	73.6	1	121	99.1	122	98.1	<u>121</u>	<u>98.6</u>		
437.leslie3d	8	<u>2870</u>	<u>26.2</u>	2872	26.2	2868	26.2	4	1304	28.8	1304	28.8	<u>1304</u>	<u>28.8</u>		
444.namd	8	536	120	535	120	<u>536</u>	<u>120</u>	8	<u>532</u>	<u>121</u>	532	121	532	121		
447.dealII	8	664	138	<u>664</u>	<u>138</u>	664	138	8	656	140	<u>650</u>	<u>141</u>	650	141		
450.soplex	8	1982	33.7	<u>1985</u>	<u>33.6</u>	1986	33.6	8	1790	37.3	<u>1789</u>	<u>37.3</u>	1784	37.4		
453.povray	8	<u>224</u>	<u>190</u>	223	191	229	186	8	191	223	192	221	<u>191</u>	<u>223</u>		
454.calculix	8	<u>571</u>	<u>116</u>	571	116	569	116	8	408	162	413	160	<u>411</u>	<u>160</u>		
459.GemsFDTD	8	<u>3449</u>	<u>24.6</u>	3449	24.6	3475	24.4	8	<u>3346</u>	<u>25.4</u>	3345	25.4	3349	25.3		
465.tonto	8	663	119	<u>667</u>	<u>118</u>	670	118	8	655	120	646	122	<u>651</u>	<u>121</u>		
470.lbm	8	4143	26.5	<u>4139</u>	<u>26.6</u>	4138	26.6	4	1430	38.4	<u>1428</u>	<u>38.5</u>	1428	38.5		
481.wrf	8	<u>1724</u>	<u>51.8</u>	1725	51.8	1724	51.8	8	1724	51.8	1720	52.0	<u>1721</u>	<u>51.9</u>		
482.sphinx3	8	<u>2833</u>	<u>55.0</u>	2845	54.8	2825	55.2	4	817	95.4	825	94.5	<u>822</u>	<u>94.9</u>		

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 437.leslie3d, 450.soplex 470.lbm and 482.sphinx3, at peak, are compiled in 32-bit mode
Hardware Sector Prefetch Enabled and Adjacent Sector Prefetch Disabled
OMP_NUM_THREADS set to number of cores
KMP_AFFINITY set to physical,0
KMP_STACKSIZE set to 64M
taskset utility used to bind CPU(s) to processes

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.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealII: -DSPEC_CPU_LP64
450.soplex: -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
470.lbm: -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

C++ benchmarks:
-fast

Fortran benchmarks:
-fast

Benchmarks using both Fortran and C:
-fast



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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 (except as noted below):

ifort

```
437.leslie3d: /opt/intel/fc/10.1.008/bin/ifort -L/opt/intel/fc/10.1.008/lib
-I/opt/intel/fc/10.1.008/include
```

Benchmarks using both Fortran and C:

icc ifort

Peak 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
444.namd: -DSPEC_CPU_LP64
447.deall: -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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Peak Optimization Flags (Continued)

482.sphinx3: -fast -unroll2

C++ benchmarks:

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

447.dealIII: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2
-ansi-alias -scalar-rep-

450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -fast
-opt-malloc-options=3

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4
-ansi-alias

Fortran benchmarks:

410.bwaves: -fast -prefetch

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0
-ansi-alias -scalar-rep-

434.zeusmp: -prof-gen(pass 1) -prof-use(pass 2) -fast

437.leslie3d: -prof-gen(pass 1) -prof-use(pass 2) -fast -prefetch
-opt-malloc-options=3

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0
-prefetch

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4 -auto

Benchmarks using both Fortran and C:

435.gromacs: -prof-gen(pass 1) -prof-use(pass 2) -fast -prefetch
-auto-ilp32

436.cactusADM: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2
-prefetch -parallel -auto-ilp32

454.calculix: -fast -unroll-aggressive -auto-ilp32

481.wrf: -fast -auto-ilp32

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>



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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>

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Tested with SPEC CPU2006 v1.0.
Report generated on Tue Jul 22 16:20:58 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 6 February 2008.