



SPEC® CFP2006 Result

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IBM Corporation

SPECfp®_rate2006 = 73.4

IBM System x3500 (Intel Xeon E5440)

SPECfp_rate_base2006 = 65.0

CPU2006 license: 11

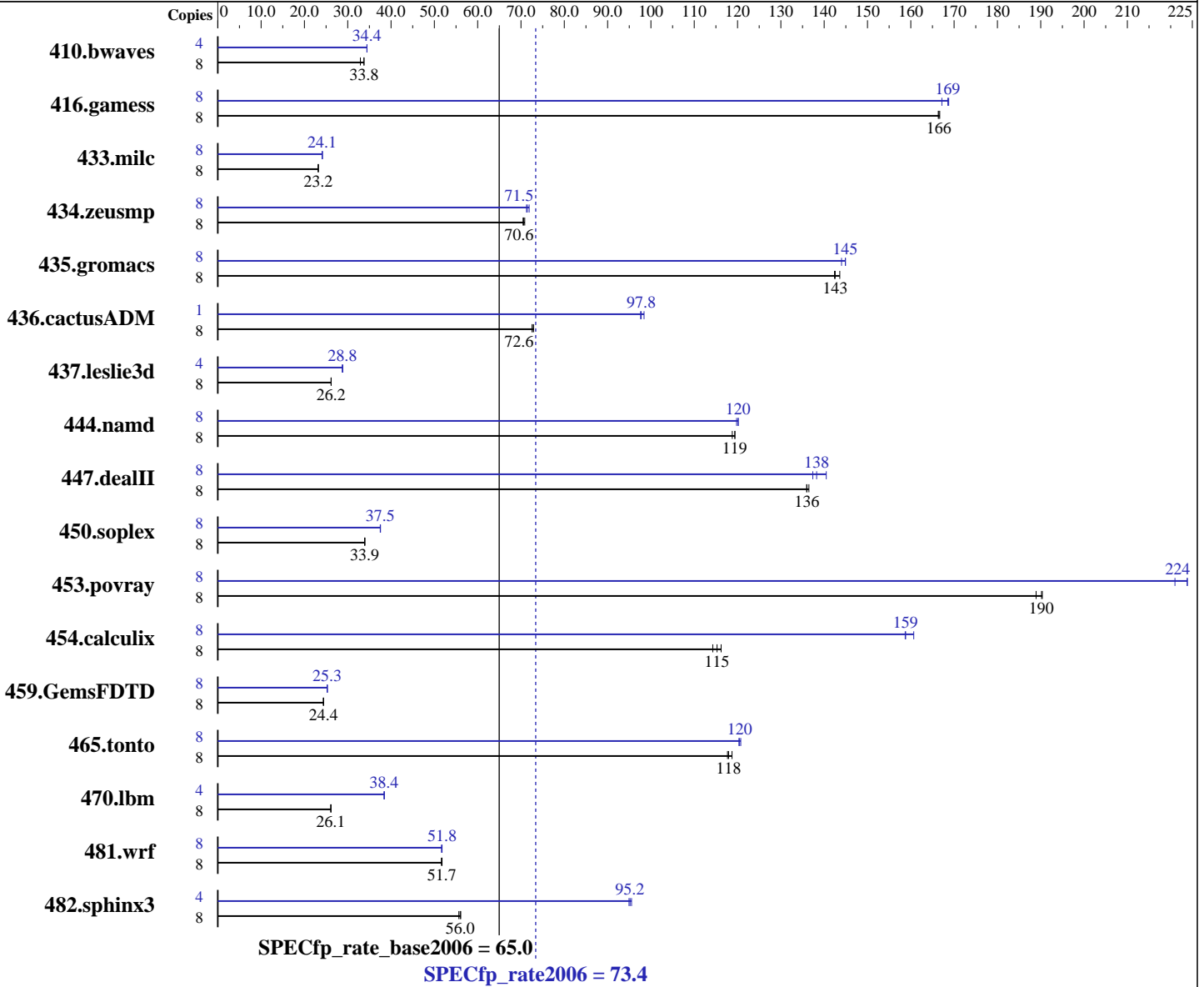
Test date: Feb-2008

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 80 GB SATA, 7200 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	3303	32.9	3221	33.8	<u>3221</u>	<u>33.8</u>	4	1577	34.5	1579	34.4	<u>1578</u>	<u>34.4</u>
416.gamess	8	940	167	942	166	<u>941</u>	<u>166</u>	8	<u>929</u>	<u>169</u>	937	167	928	169
433.milc	8	3164	23.2	<u>3166</u>	<u>23.2</u>	3167	23.2	8	<u>3044</u>	<u>24.1</u>	3046	24.1	3041	24.1
434.zeusmp	8	<u>1031</u>	<u>70.6</u>	1033	70.5	1027	70.9	8	<u>1019</u>	<u>71.5</u>	1013	71.9	1021	71.3
435.gromacs	8	<u>401</u>	<u>143</u>	398	144	401	142	8	<u>394</u>	<u>145</u>	397	144	394	145
436.cactusADM	8	1317	72.6	1311	72.9	<u>1317</u>	<u>72.6</u>	1	122	97.6	121	98.4	<u>122</u>	<u>97.8</u>
437.leslie3d	8	2871	26.2	2875	26.2	<u>2874</u>	<u>26.2</u>	4	1307	28.8	1303	28.9	<u>1307</u>	<u>28.8</u>
444.namd	8	540	119	537	119	<u>538</u>	<u>119</u>	8	534	120	536	120	<u>534</u>	<u>120</u>
447.dealII	8	671	136	<u>673</u>	<u>136</u>	673	136	8	651	140	<u>662</u>	<u>138</u>	666	137
450.soplex	8	<u>1966</u>	<u>33.9</u>	1968	33.9	1965	34.0	8	1776	37.6	1779	37.5	<u>1778</u>	<u>37.5</u>
453.povray	8	224	190	225	189	<u>224</u>	<u>190</u>	8	<u>190</u>	<u>224</u>	193	221	190	224
454.calculix	8	578	114	<u>573</u>	<u>115</u>	568	116	8	<u>416</u>	<u>159</u>	411	161	416	159
459.GemsFDTD	8	3483	24.4	3473	24.4	<u>3478</u>	<u>24.4</u>	8	<u>3360</u>	<u>25.3</u>	3354	25.3	3361	25.3
465.tonto	8	663	119	669	118	<u>667</u>	<u>118</u>	8	652	121	<u>653</u>	<u>120</u>	654	120
470.lbm	8	4210	26.1	<u>4208</u>	<u>26.1</u>	4208	26.1	4	<u>1431</u>	<u>38.4</u>	1429	38.5	1431	38.4
481.wrf	8	1726	51.8	1731	51.6	<u>1727</u>	<u>51.7</u>	8	<u>1726</u>	<u>51.8</u>	1730	51.6	1726	51.8
482.sphinx3	8	2802	55.7	<u>2787</u>	<u>56.0</u>	2779	56.1	4	821	94.9	816	95.5	<u>819</u>	<u>95.2</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.deallI: -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.20090714.15.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.20090714.15.xml>

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