SPEC® CFP2006 Result

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IBM Corporation

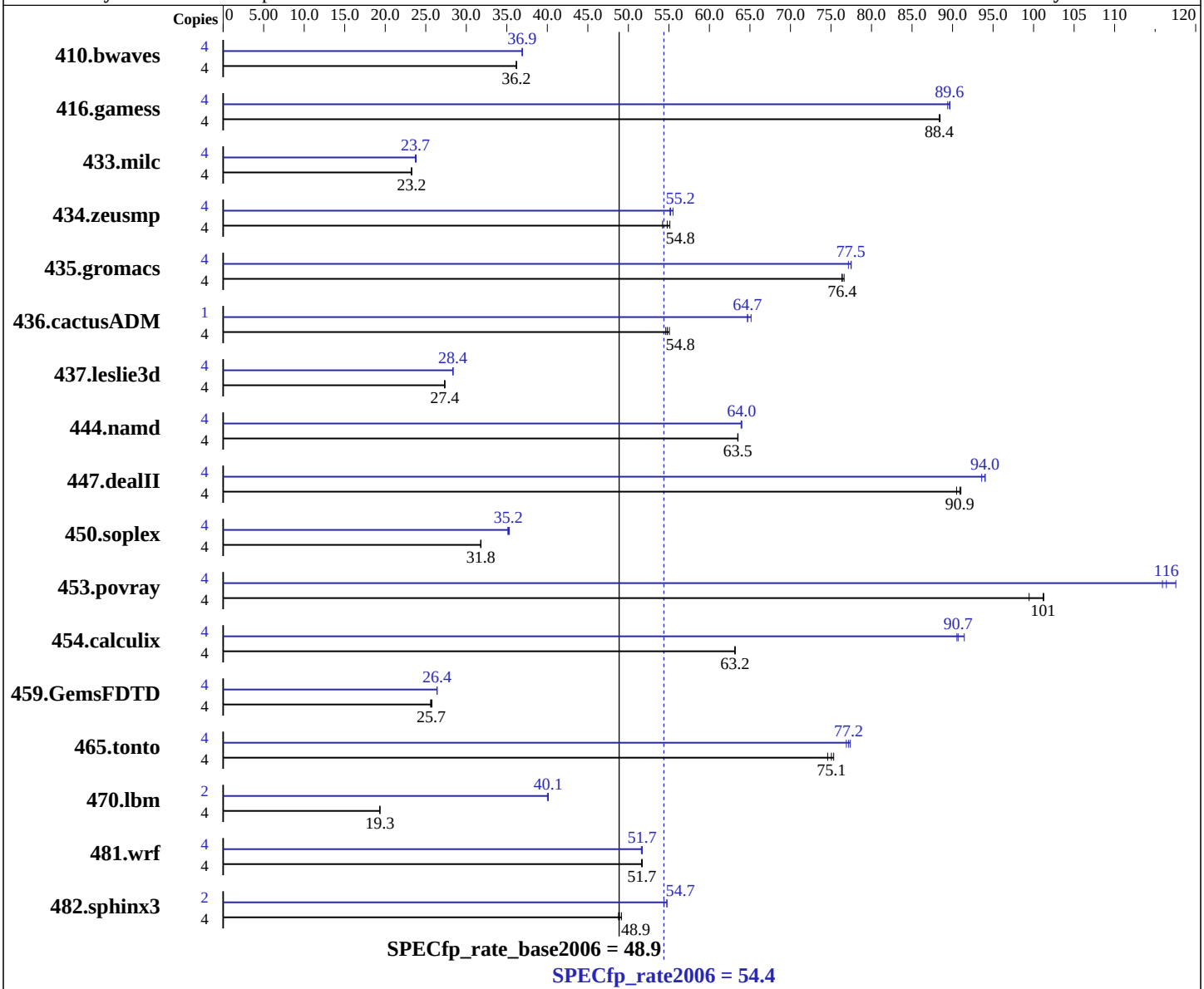
IBM BladeCenter HS21 XM (Intel Xeon L5240)

SPECfp®_rate2006 = 54.4

SPECfp_rate_base2006 = 48.9

CPU2006 license: 11
Test sponsor: IBM Corporation
Tested by: IBM Corporation

Test date: Feb-2008
Hardware Availability: May-2008
Software Availability: Nov-2007



Hardware

CPU Name:	Intel Xeon L5240
CPU Characteristics:	1333MHz system bus
CPU MHz:	3000
FPU:	Integrated
CPU(s) enabled:	4 cores, 2 chips, 2 cores/chip
CPU(s) orderable:	1,2 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	6 MB I+D on chip per chip

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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	4	1503	36.2	1502	36.2	**1502**	**36.2**	4	1473	36.9	1472	36.9	**1473**	**36.9**
416.gamess	4	885	88.5	**886**	**88.4**	886	88.4	4	876	89.4	**874**	**89.6**	873	89.7
433.milc	4	1581	23.2	**1579**	**23.2**	1578	23.3	4	1549	23.7	**1547**	**23.7**	1541	23.8
434.zeusmp	4	671	54.2	**664**	**54.8**	660	55.1	4	**659**	**55.2**	660	55.1	656	55.5
435.gromacs	4	374	76.3	373	76.6	**374**	**76.4**	4	**369**	**77.5**	370	77.2	368	77.5
436.cactusADM	4	868	55.1	**872**	**54.8**	875	54.6	1	**185**	**64.7**	185	64.7	183	65.1
437.leslie3d	4	1374	27.4	1377	27.3	**1375**	**27.4**	4	**1326**	**28.4**	1327	28.3	1325	28.4
444.namd	4	505	63.5	505	63.5	**505**	**63.5**	4	502	63.9	**501**	**64.0**	501	64.0
447.dealII	4	**503**	**90.9**	503	91.0	506	90.5	4	487	94.0	**487**	**94.0**	489	93.6
450.soplex	4	1048	31.8	**1049**	**31.8**	1050	31.8	4	950	35.1	**948**	**35.2**	945	35.3
453.povray	4	214	99.4	**210**	**101**	210	101	4	**183**	**116**	181	118	184	116
454.calculix	4	523	63.1	**523**	**63.2**	522	63.2	4	361	91.4	364	90.5	**364**	**90.7**
459.GemsFDTD	4	**1653**	**25.7**	1647	25.8	1658	25.6	4	**1608**	**26.4**	1608	26.4	1608	26.4
465.tonto	4	528	74.6	522	75.3	**524**	**75.1**	4	509	77.4	**510**	**77.2**	512	76.9
470.lbm	4	2843	19.3	**2842**	**19.3**	2841	19.3	2	685	40.1	687	40.0	**685**	**40.1**
481.wrf	4	**864**	**51.7**	864	51.7	865	51.6	4	866	51.6	**864**	**51.7**	864	51.7
482.sphinx3	4	1598	48.8	1586	49.2	**1594**	**48.9**	2	712	54.8	716	54.4	**712**	**54.7**

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 Enabled
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

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.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`

Continued on next page

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.dealII: -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-linux64-revC.20090713.html

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/Intel-ic10.1-fp-linux64-revC.20090713.xml`

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