SPEC® CFP2006 Result
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Intel Corporation

$SPECfp^{®}2006 =$ 31.2

Intel QSSC-S4R (Intel Xeon E7530, 1.86 GHz)

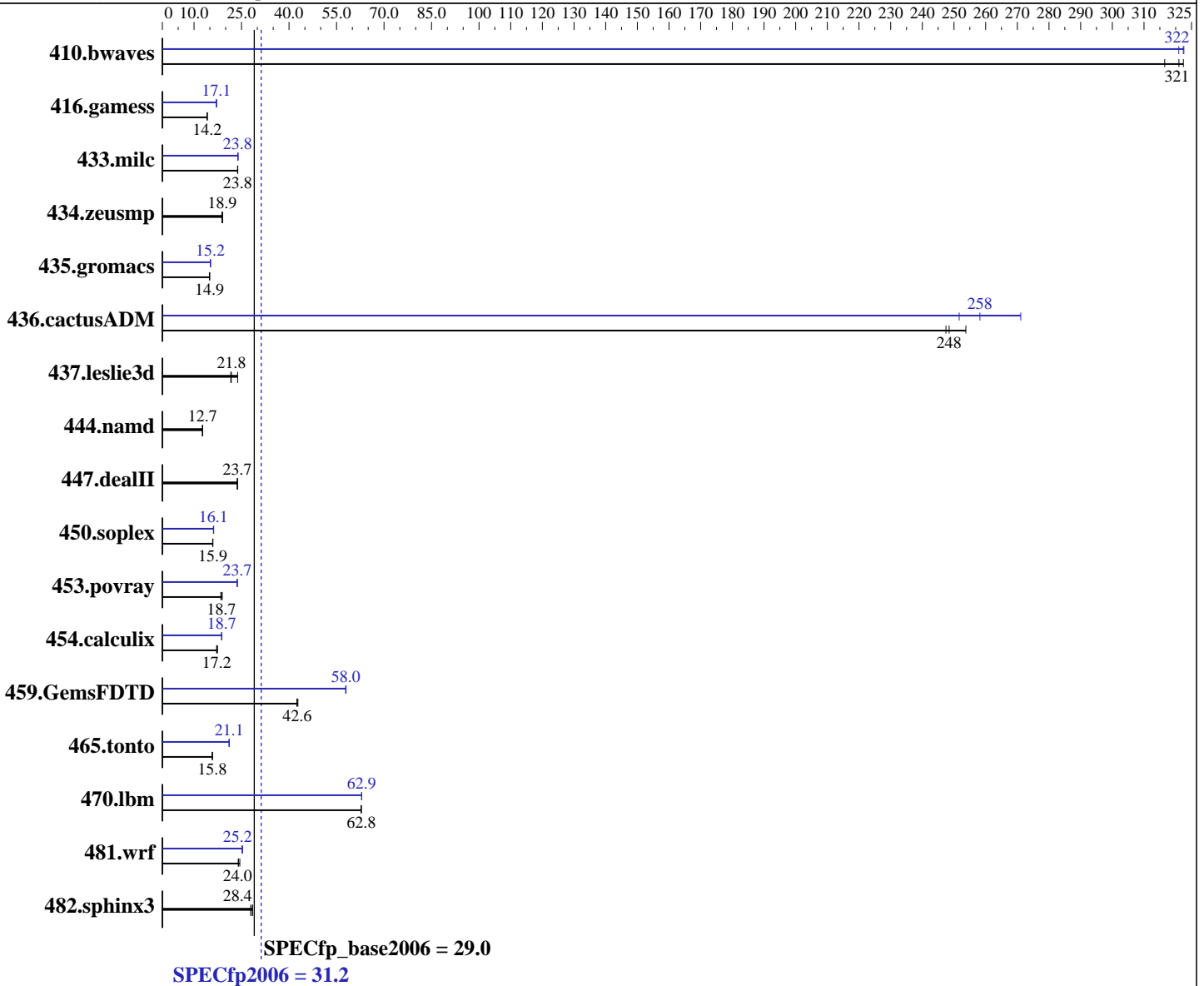$SPECfp\_base2006 =$ 29.0

CPU2006 license: 13
Test sponsor: Intel Corporation
Tested by: Intel Corporation

Test date: Mar-2010
Hardware Availability: Mar-2010
Software Availability: Jan-2010

Benchmark	Peak	Base
410.bwaves	322	321
416.gamess	17.1	14.2
433.milc	23.8	23.8
434.zeusmp		18.9
435.gromacs	15.2	14.9
436.cactusADM	258	248
437.leslie3d		21.8
444.namd		12.7
447.dealII		23.7
450.soplex	16.1	15.9
453.povray	23.7	18.7
454.calculix	18.7	17.2
459.GemsFDTD	58.0	42.6
465.tonto	21.1	15.8
470.lbm	62.9	62.8
481.wrf	25.2	24.0
482.sphinx3	28.4	

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Hardware
CPU Name: Intel Xeon E7530
CPU Characteristics: Intel Turbo Boost Technology up to 2.13 GHz
CPU MHz: 1866
FPU: Integrated
CPU(s) enabled: 24 cores, 4 chips, 6 cores/chip, 2 threads/core
CPU(s) orderable: 1,2,4 chips
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 256 KB I+D on chip per core
Continued on next page

Software
Operating System: SuSe Linux Enterprise Server 11
Kernel 2.6.27.19-5 on x86_64
Compiler: Intel C++ and Fortran Professional Compiler for IA32 and Intel 64, Version 11.1
Build 20091130 Package ID: l_cproc_p_11.1.064, l_cprof_p_11.1.064
Auto Parallel: Yes
File System: ext3
System State: Run level 3 (multi-user)
Continued on next page

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L3 Cache:	12 MB I+D on chip per chip
Other Cache:	None
Memory:	256 GB (64x 4GB Quad-Rank DDR3-1066, ECC, CL9)
Disk Subsystem:	146 GB SAS, 10000RPM
Other Hardware:	None

Base Pointers:	64-bit
Peak Pointers:	32/64-bit
Other Software:	None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	42.9	317	42.1	322	**42.3**	**321**	42.3	321	42.1	323	**42.2**	**322**
416.gamess	1381	14.2	**1382**	**14.2**	1385	14.1	1144	17.1	1149	17.0	**1145**	**17.1**
433.milc	386	23.8	385	23.8	**386**	**23.8**	**385**	**23.8**	386	23.8	383	24.0
434.zeusmp	479	19.0	**480**	**18.9**	484	18.8	479	19.0	**480**	**18.9**	484	18.8
435.gromacs	481	14.9	**478**	**14.9**	478	14.9	471	15.2	**470**	**15.2**	469	15.2
436.cactusADM	**48.1**	**248**	48.3	247	47.1	254	**46.3**	**258**	47.5	252	44.1	271
437.leslie3d	**431**	**21.8**	435	21.6	395	23.8	**431**	**21.8**	435	21.6	395	23.8
444.namd	633	12.7	632	12.7	**632**	**12.7**	633	12.7	632	12.7	**632**	**12.7**
447.dealII	483	23.7	483	23.7	**483**	**23.7**	483	23.7	483	23.7	**483**	**23.7**
450.soplex	525	15.9	522	16.0	**524**	**15.9**	517	16.1	514	16.2	**517**	**16.1**
453.povray	**285**	**18.7**	288	18.5	281	18.9	225	23.7	226	23.5	**225**	**23.7**
454.calculix	481	17.1	**479**	**17.2**	474	17.4	441	18.7	440	18.7	**440**	**18.7**
459.GemsFDTD	248	42.8	**249**	**42.6**	250	42.5	183	57.9	**183**	**58.0**	183	58.0
465.tonto	**624**	**15.8**	623	15.8	624	15.8	466	21.1	467	21.1	**466**	**21.1**
470.lbm	219	62.8	**219**	**62.8**	219	62.8	**218**	**62.9**	218	63.0	218	62.9
481.wrf	457	24.5	**465**	**24.0**	466	24.0	443	25.2	**443**	**25.2**	441	25.3
482.sphinx3	**686**	**28.4**	685	28.4	699	27.9	**686**	**28.4**	685	28.4	699	27.9

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

General Notes

```
OMP_NUM_THREADS set to number of cores
KMP_AFFINITY set to granularity=fine,scatter
KMP_STACKSIZE set to 200M
```

Base Compiler Invocation

C benchmarks:
```
icc   -m64
```

C++ benchmarks:
```
icpc   -m64
```

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Base Compiler Invocation (Continued)

Fortran benchmarks:
```
ifort -m64
```

Benchmarks using both Fortran and C:
```
icc    -m64 ifort -m64
```

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:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
```

C++ benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
```

Fortran benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
```

Benchmarks using both Fortran and C:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
```

Peak Compiler Invocation

C benchmarks:
```
icc    -m64
```

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Peak Compiler Invocation (Continued)

C++ benchmarks:
```
icpc  -m64
```

Fortran benchmarks:
```
ifort -m64
```

Benchmarks using both Fortran and C:
```
icc   -m64 ifort -m64
```

Peak Portability Flags

```
Same as Base Portability Flags
```

Peak Optimization Flags

C benchmarks:

433.milc: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
`-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)`
`-ansi-alias`

470.lbm: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
`-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)`
`-parallel -ansi-alias -auto-ilp32`

482.sphinx3: `basepeak = yes`

C++ benchmarks:

444.namd: `basepeak = yes`

447.dealII: `basepeak = yes`

450.soplex: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
`-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)`
`-opt-malloc-options=3 -auto-ilp32`

453.povray: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
`-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)`
`-unroll4 -ansi-alias`

Fortran benchmarks:

410.bwaves: `-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch`
`-parallel`

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Peak Optimization Flags (Continued)

416.gamess: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)
-unroll2 -Ob0 -ansi-alias -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)
-unroll2 -Ob0 -opt-prefetch -parallel

465.tonto: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)
-inline-calloc -opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

435.gromacs: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)
-opt-prefetch -auto-ilp32

436.cactusADM: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)
-unroll2 -opt-prefetch -parallel -auto-ilp32

454.calculix: -xSSE4.2 -ipo -O3 -no-prec-div -static -auto-ilp32

481.wrf: Same as 454.calculix

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic11.1-linux64-revG.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/Intel-ic11.1-linux64-revG.xml

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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