SPEC® CFP2006 Result

HITACHI

BladeSymphony BS320 (Intel Xeon X5670)

$SPECfp^{®}2006 =$ 45.2

$SPECfp\_base2006 =$ 42.5
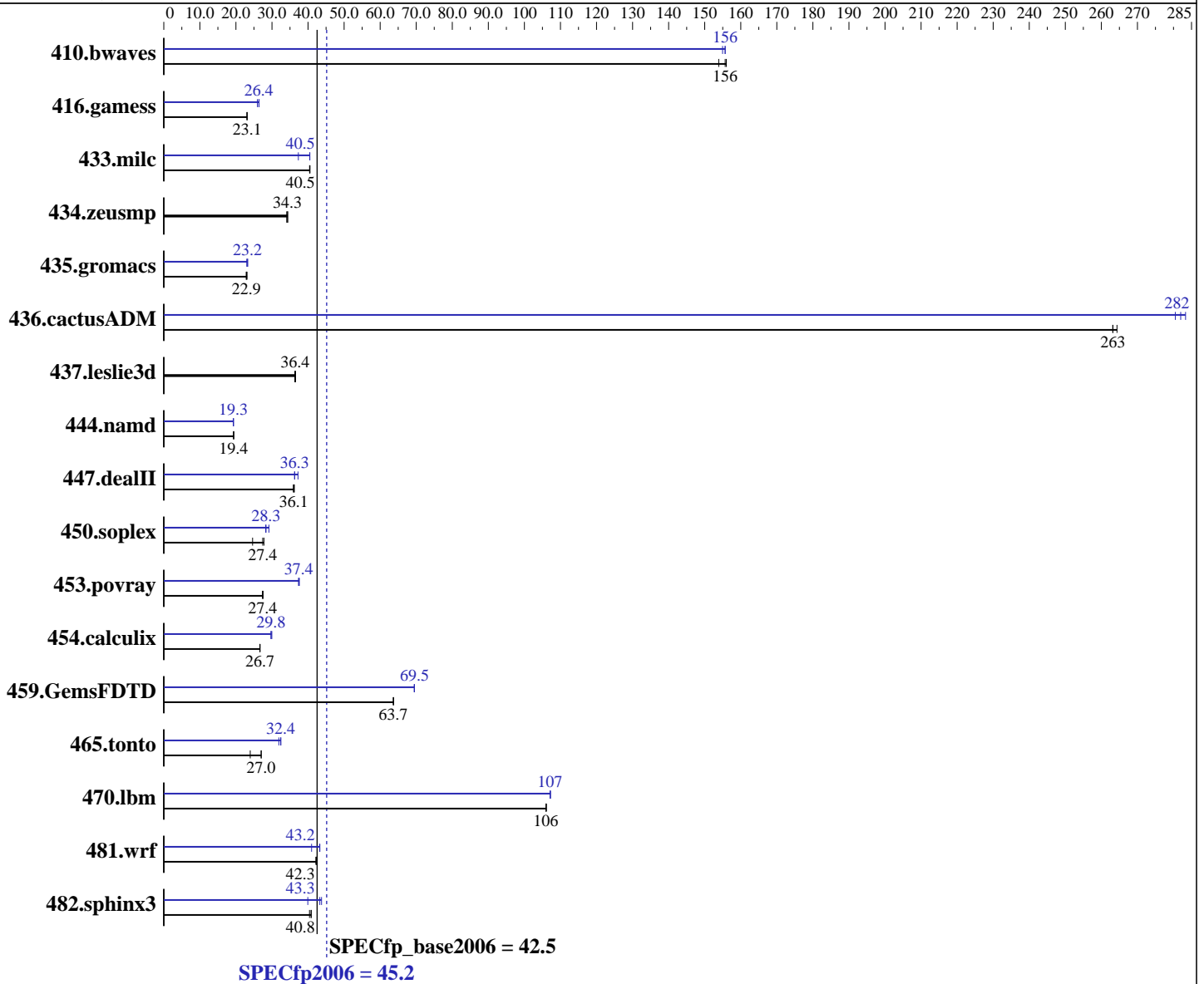
CPU2006 license: 872
Test sponsor: HITACHI
Tested by: HITACHI

Test date: Mar-2010
Hardware Availability: Mar-2010
Software Availability: Dec-2009

410.bwaves	156 / 156
416.gamess	26.4 / 23.1
433.milc	40.5 / 40.5
434.zeusmp	34.3
435.gromacs	23.2 / 22.9
436.cactusADM	282 / 263
437.leslie3d	36.4
444.namd	19.3 / 19.4
447.dealII	36.3 / 36.1
450.soplex	28.3 / 27.4
453.povray	37.4 / 27.4
454.calculix	29.8 / 26.7
459.GemsFDTD	69.5 / 63.7
465.tonto	32.4 / 27.0
470.lbm	107 / 106
481.wrf	43.2 / 42.3
482.sphinx3	43.3 / 40.8

SPECfp_base2006 = 42.5
SPECfp2006 = 45.2

Hardware

CPU Name:	Intel Xeon X5670
CPU Characteristics:	Intel Turbo Boost Technology up to 3.33 GHz
CPU MHz:	2933
FPU:	Integrated
CPU(s) enabled:	12 cores, 2 chips, 6 cores/chip
CPU(s) orderable:	1, 2 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:	Red Hat Enterprise Linux Server release 5.4.3, Advanced Platform, Kernel 2.6.18-164.9.1.el5 on an x86_64
Compiler:	Intel C++ Compiler 11.1 for Linux Build 20091012 Package ID: l_cproc_p_11.1.059 Intel Fortran Compiler 11.1 for Linux Build 20091012 Package ID: l_cprof_p_11.1.059
Auto Parallel:	Yes
File System:	ext3

Continued on next page

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L3 Cache:	12 MB I+D on chip per chip	System State:	Multi-user run level 3
Other Cache:	None	Base Pointers:	64-bit
Memory:	48 GB(6 x 8 GB PC3-10600R running at 1333 MHz, 2 rank)	Peak Pointers:	32/64-bit
		Other Software:	None
Disk Subsystem:	1 x 147 GB 10000 rpm SAS		
Other Hardware:	None		

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	88.3	154	87.1	156	**87.3**	**156**	**87.3**	**156**	87.3	156	87.7	155
416.gamess	849	23.1	**848**	**23.1**	848	23.1	741	26.4	755	25.9	**743**	**26.4**
433.milc	227	40.5	**227**	**40.5**	227	40.4	227	40.5	**227**	**40.5**	246	37.3
434.zeusmp	**265**	**34.3**	265	34.4	267	34.1	**265**	**34.3**	265	34.4	267	34.1
435.gromacs	313	22.8	**311**	**22.9**	309	23.1	**307**	**23.2**	307	23.2	310	23.0
436.cactusADM	45.2	264	45.4	263	**45.4**	**263**	42.2	283	**42.4**	**282**	42.6	281
437.leslie3d	**258**	**36.4**	259	36.3	257	36.5	**258**	**36.4**	259	36.3	257	36.5
444.namd	413	19.4	**414**	**19.4**	414	19.4	416	19.3	**416**	**19.3**	415	19.3
447.dealII	**317**	**36.1**	316	36.2	319	35.9	**315**	**36.3**	315	36.3	307	37.2
450.soplex	**304**	**27.4**	300	27.8	339	24.6	286	29.2	**294**	**28.3**	295	28.3
453.povray	193	27.5	194	27.4	**194**	**27.4**	142	37.6	**142**	**37.4**	142	37.4
454.calculix	310	26.6	**309**	**26.7**	309	26.7	**277**	**29.8**	278	29.7	275	30.0
459.GemsFDTD	**167**	**63.7**	167	63.7	167	63.7	153	69.4	**153**	**69.5**	153	69.5
465.tonto	364	27.0	**365**	**27.0**	411	24.0	303	32.4	**303**	**32.4**	308	31.9
470.lbm	129	106	**130**	**106**	130	106	128	107	128	107	**128**	**107**
481.wrf	265	42.2	**264**	**42.3**	264	42.4	258	43.3	273	41.0	**259**	**43.2**
482.sphinx3	482	40.4	**477**	**40.8**	477	40.9	**450**	**43.3**	488	39.9	446	43.7

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

Operating System Notes

```
'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
OMP_NUM_THREADS set to number of cores
KMP_AFFINITY set to granularity=fine,scatter
```

Platform Notes

```
BIOS Settings:
Intel HT Technology = Disabled
NUMA = Disabled
```

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Base Compiler Invocation

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

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

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
```

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BladeSymphony BS320 (Intel Xeon X5670)

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Tested by: HITACHI

Test date: Mar-2010
Hardware Availability: Mar-2010
Software Availability: Dec-2009

Peak Compiler Invocation

C benchmarks (except as noted below):
        `icc -m64`

        482.sphinx3: `icc -m32`

C++ benchmarks (except as noted below):
        `icpc -m64`

        450.soplex: `icpc -m32`

Fortran benchmarks:
        `ifort -m64`

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

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`
        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`
        470.lbm: `-DSPEC_CPU_LP64`
        481.wrf: `-DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX`

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`

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Peak Optimization Flags (Continued)

```
  482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -static -unroll2
```

C++ benchmarks:

```
     444.namd: -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)
               -fno-alias -auto-ilp32

    447.dealII: -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 -ansi-alias -scalar-rep- -auto-ilp32

    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

   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

   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
```

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CPU2006 license: 872		**Test date:**	Mar-2010
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Peak Optimization Flags (Continued)

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-revE.20100427.00.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/Intel-ic11.1-linux64-revE.20100427.00.xml`

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

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