



SPEC[®] CFP2006 Result

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HITACHI

SPECfp[®]2006 = **65.0**

Compute Blade 320 (Intel Xeon X5690)

SPECfp_base2006 = **61.3**

CPU2006 license: 35

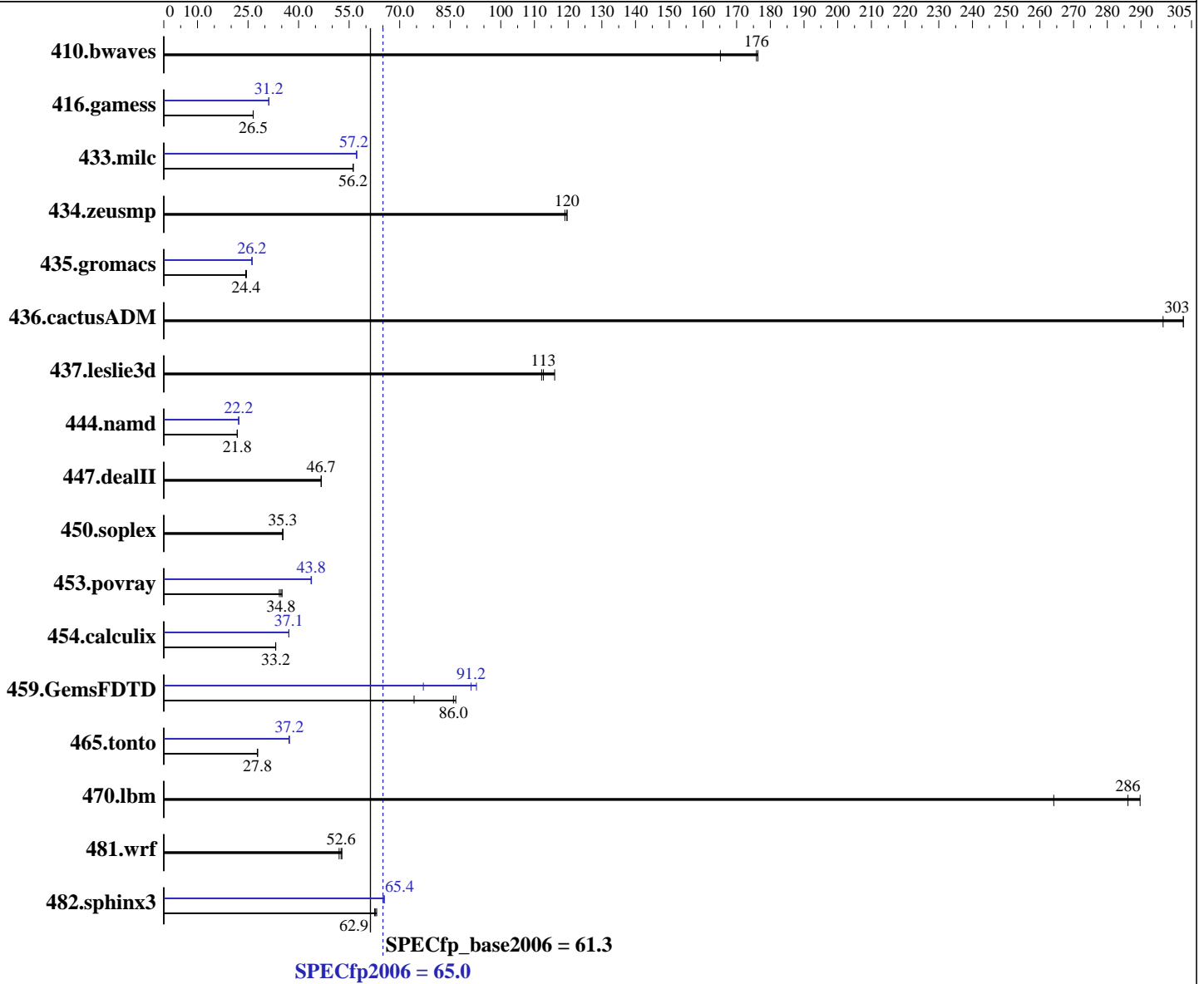
Test sponsor: HITACHI

Tested by: HITACHI

Test date: Jun-2011

Hardware Availability: Mar-2011

Software Availability: Apr-2011



Hardware

CPU Name: Intel Xeon X5690
 CPU Characteristics: Intel Turbo Boost Technology up to 3.73 GHz
 CPU MHz: 3466
 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

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Software

Operating System: SuSE Linux Enterprise Server 11 SP1 (x86_64), Kernel 2.6.32.12-0.7-default
 Compiler: Intel C++ Compiler XE for Linux Version 12.0.3.174 Build 20110309
 Intel Fortran Compiler XE for Linux Version 12.0.3.174 Build 20110309
 Auto Parallel: Yes

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L3 Cache: 12 MB I+D on chip per chip
 Other Cache: None
 Memory: 48 GB (6 x 8 GB 2Rx4 PC3-10600R-9, ECC)
 Disk Subsystem: 2 x 146 GB 10000 rpm Fibre Channel RAID1 configuration
 Other Hardware: None

File System: ext3
 System State: Run level 3 (multi-user)
 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	82.3	165	77.1	176	<u>77.3</u>	<u>176</u>	82.3	165	77.1	176	<u>77.3</u>	<u>176</u>
416.gamess	<u>738</u>	<u>26.5</u>	739	26.5	737	26.6	627	31.2	629	31.1	<u>628</u>	<u>31.2</u>
433.milc	163	56.2	163	56.2	<u>163</u>	<u>56.2</u>	160	57.2	161	57.2	<u>160</u>	<u>57.2</u>
434.zeusmp	<u>76.0</u>	<u>120</u>	76.0	120	76.4	119	<u>76.0</u>	<u>120</u>	76.0	120	76.4	119
435.gromacs	294	24.3	291	24.5	<u>292</u>	<u>24.4</u>	273	26.2	273	26.2	<u>273</u>	<u>26.2</u>
436.cactusADM	40.3	297	<u>39.5</u>	<u>303</u>	39.5	303	40.3	297	<u>39.5</u>	<u>303</u>	39.5	303
437.leslie3d	<u>83.4</u>	<u>113</u>	83.8	112	81.0	116	<u>83.4</u>	<u>113</u>	83.8	112	81.0	116
444.namd	368	21.8	<u>368</u>	<u>21.8</u>	368	21.8	361	22.2	<u>361</u>	<u>22.2</u>	361	22.2
447.dealII	<u>245</u>	<u>46.7</u>	245	46.8	245	46.7	<u>245</u>	<u>46.7</u>	245	46.8	245	46.7
450.soplex	236	35.4	236	35.3	<u>236</u>	<u>35.3</u>	236	35.4	236	35.3	<u>236</u>	<u>35.3</u>
453.povray	155	34.3	<u>153</u>	<u>34.8</u>	152	35.1	<u>122</u>	<u>43.8</u>	122	43.7	121	43.8
454.calculix	248	33.2	249	33.2	<u>248</u>	<u>33.2</u>	<u>222</u>	<u>37.1</u>	222	37.1	222	37.1
459.GemsFDTD	<u>123</u>	<u>86.0</u>	122	86.7	143	74.3	138	77.0	114	92.8	<u>116</u>	<u>91.2</u>
465.tonto	<u>354</u>	<u>27.8</u>	353	27.8	355	27.8	264	37.3	265	37.2	<u>264</u>	<u>37.2</u>
470.lbm	47.4	290	<u>48.0</u>	<u>286</u>	52.0	264	47.4	290	<u>48.0</u>	<u>286</u>	52.0	264
481.wrf	211	52.9	<u>212</u>	<u>52.6</u>	215	52.0	211	52.9	<u>212</u>	<u>52.6</u>	215	52.0
482.sphinx3	308	63.2	<u>310</u>	<u>62.9</u>	311	62.6	298	65.4	<u>298</u>	<u>65.4</u>	299	65.1

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
Hugepages was enabled with the following:
'nudev /mnt/hugepages hugetlbfs defaults 0 0' added to /etc/fstab
echo 900 > /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

Platform Notes

BIOS Settings:
 Intel HT Technology = Disabled
 Data Reuse Optimization = 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
-ansi-alias

C++ benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias

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
-ansi-alias



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Peak Compiler Invocation

C benchmarks:

icc -m64

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) -prof-use(pass 2) -static -auto-ilp32
-ansi-alias

470.lbm: basepeak = yes

482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias
-parallel

C++ benchmarks:

444.namd: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -fno-alias
-auto-ilp32

447.dealIII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

Fortran benchmarks:

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Peak Optimization Flags (Continued)

410.bwaves: basepeak = yes

416.gamess: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -unroll2
-inline-level=0 -scalar-rep- -static

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) -prof-use(pass 2) -unroll2
-inline-level=0 -opt-prefetch -parallel
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

465.tonto: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -inline-calloc
-opt-malloc-options=3 -auto -unroll4
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

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) -prof-use(pass 2) -static -auto-ilp32
-ansi-alias

436.cactusADM: basepeak = yes

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

481.wrf: basepeak = yes

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.html>

<http://www.spec.org/cpu2006/flags/PlatformHitachi.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.xml>

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Tested with SPEC CPU2006 v1.1.
Report generated on Wed Jul 23 22:00:00 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 5 July 2011.