



SPEC[®] CFP2006 Result

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Dell Inc.

SPECfp[®]2006 = 64.6

PowerEdge T610 (Intel Xeon X5690, 3.46 GHz)

SPECfp_base2006 = 60.3

CPU2006 license: 55

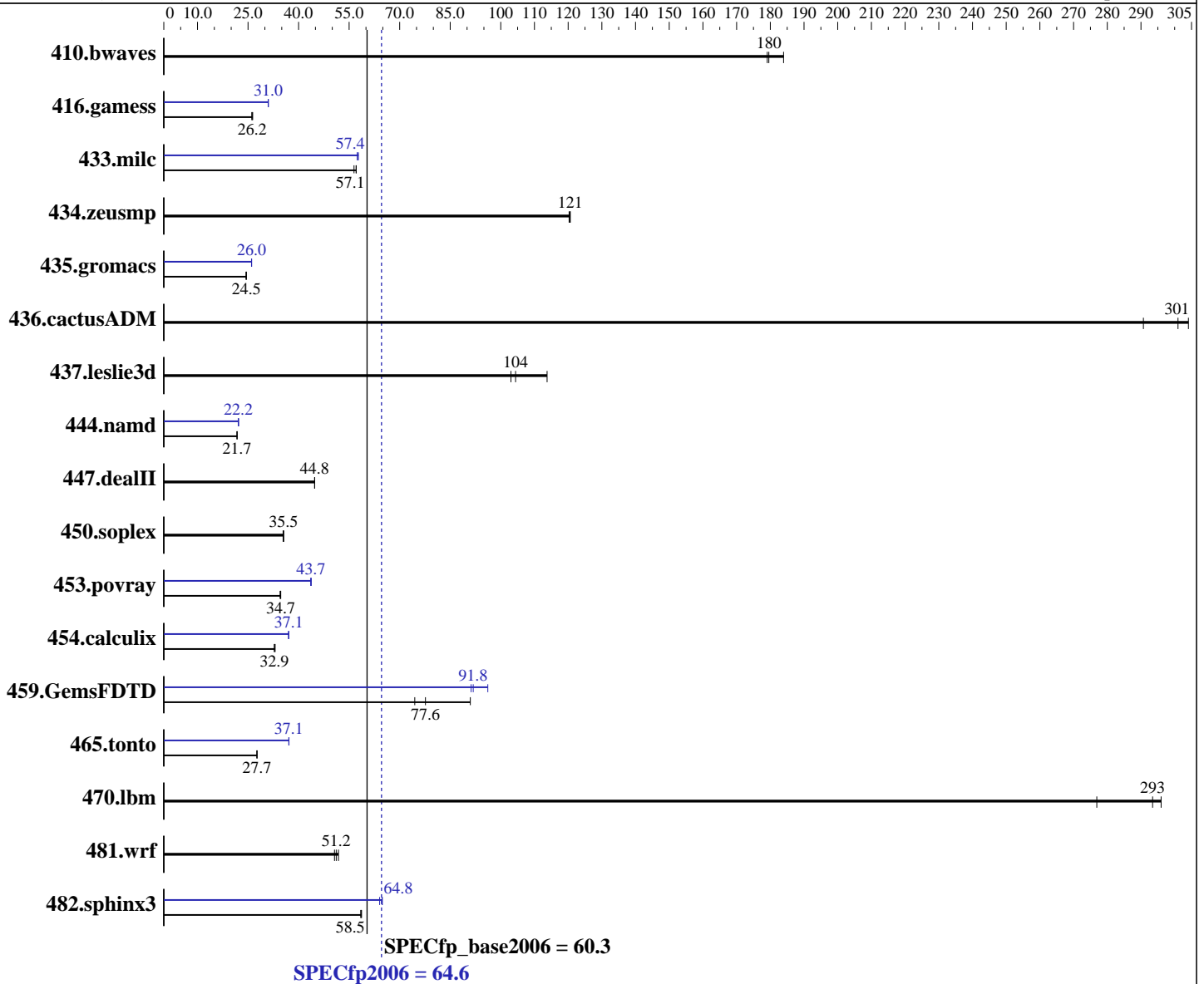
Test date: Jun-2011

Test sponsor: Dell Inc.

Hardware Availability: Feb-2011

Tested by: Dell Inc.

Software Availability: Apr-2011



Hardware

CPU Name: Intel Xeon X5690
 CPU Characteristics: Intel Turbo Boost Technology up to 3.73 GHz
 CPU MHz: 3467
 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++ and Fortran Intel 64 Compiler XE for
 applications running on Intel 64
 Version 12.0 Update 3
 Auto Parallel: Yes
 File System: ext3
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit

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L3 Cache: 12 MB I+D on chip per chip
 Other Cache: None
 Memory: 48 GB (12 x 4 GB 2Rx4 PC3-10600R-9, ECC)
 Disk Subsystem: 2 x 146 GB 15000 RPM SAS
 Other Hardware: None

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	<u>75.7</u>	<u>180</u>	75.9	179	73.9	184	<u>75.7</u>	<u>180</u>	75.9	179	73.9	184
416.gamess	<u>746</u>	<u>26.2</u>	742	26.4	750	26.1	632	31.0	<u>632</u>	<u>31.0</u>	631	31.0
433.milc	163	56.5	161	57.1	<u>161</u>	<u>57.1</u>	<u>160</u>	<u>57.4</u>	159	57.8	160	57.4
434.zeusmp	75.7	120	<u>75.5</u>	<u>121</u>	75.5	121	75.7	120	<u>75.5</u>	<u>121</u>	75.5	121
435.gromacs	<u>292</u>	<u>24.5</u>	292	24.4	292	24.5	274	26.1	274	26.0	<u>274</u>	<u>26.0</u>
436.cactusADM	41.1	291	<u>39.7</u>	<u>301</u>	39.3	304	41.1	291	<u>39.7</u>	<u>301</u>	39.3	304
437.leslie3d	<u>90.0</u>	<u>104</u>	91.2	103	82.6	114	<u>90.0</u>	<u>104</u>	91.2	103	82.6	114
444.namd	368	21.8	<u>369</u>	<u>21.7</u>	369	21.7	362	22.2	<u>362</u>	<u>22.2</u>	362	22.1
447.dealII	<u>256</u>	<u>44.8</u>	255	44.8	256	44.8	<u>256</u>	<u>44.8</u>	255	44.8	256	44.8
450.soplex	<u>235</u>	<u>35.5</u>	236	35.4	234	35.6	<u>235</u>	<u>35.5</u>	236	35.4	234	35.6
453.povray	154	34.5	153	34.7	<u>153</u>	<u>34.7</u>	122	43.6	122	43.8	<u>122</u>	<u>43.7</u>
454.calculix	<u>251</u>	<u>32.9</u>	251	32.8	250	33.0	<u>223</u>	37.1	<u>223</u>	<u>37.1</u>	223	37.1
459.GemsFDTD	142	74.5	<u>137</u>	<u>77.6</u>	117	91.0	116	91.2	110	96.2	<u>116</u>	<u>91.8</u>
465.tonto	356	27.6	<u>356</u>	<u>27.7</u>	356	27.7	265	37.1	265	37.2	<u>265</u>	<u>37.1</u>
470.lbm	49.6	277	<u>46.8</u>	<u>293</u>	46.4	296	49.6	277	<u>46.8</u>	<u>293</u>	46.4	296
481.wrf	<u>218</u>	<u>51.2</u>	220	50.7	215	51.8	<u>218</u>	<u>51.2</u>	220	50.7	215	51.8
482.sphinx3	333	58.4	332	58.7	<u>333</u>	<u>58.5</u>	304	64.0	300	64.9	<u>301</u>	<u>64.8</u>

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

'mount -t hugetlbfs nodev /mnt/hugepages' was used to enable large pages
 echo 900 > /proc/sys/vm/nr_hugepages
 export HUGETLB_MORECORE=yes
 export LD_PRELOAD=/usr/lib64/libhugetlbfs.so

Platform Notes

BIOS Settings:
 Power Management = Maximum Performance (Default = Active Power Controller)
 Data Reuse = Disabled (Default = Enabled)
 Logical Processor = Disabled (Default = Enabled)



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General Notes

OMP_NUM_THREADS set to number of cores
The Dell PowerEdge T610 and the Bull NovaScale T840 F2 models are electronically equivalent. The results have been measured on a Dell PowerEdge T610 model
Binaries were compiled on RHEL5.5

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.deallI: -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

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Base Optimization Flags (Continued)

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`

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:

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Peak Optimization Flags (Continued)

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.dealII: 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:

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/Intel-Linux64-Platform.20110524.00.html>



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

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<http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20110524.00.xml>

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Tested with SPEC CPU2006 v1.1.
Report generated on Wed Jul 23 23:24:34 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 16 August 2011.