



SPEC[®] CFP2006 Result

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Dell Inc.

SPECfp[®]2006 = 64.2

PowerEdge M710 (Intel Xeon X5687, 3.60 GHz)

SPECfp_base2006 = 61.3

CPU2006 license: 55

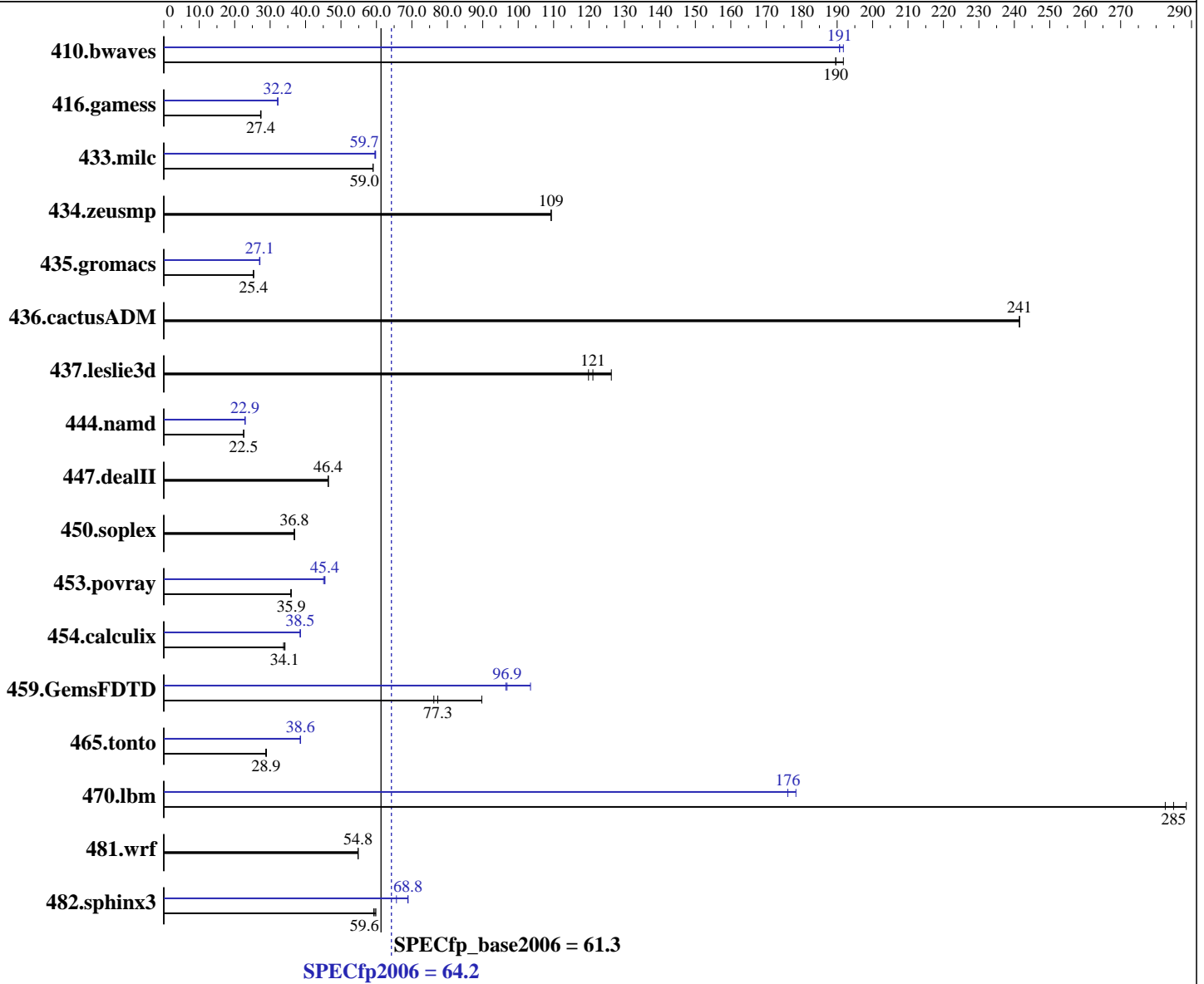
Test date: Feb-2011

Test sponsor: Dell Inc.

Hardware Availability: Feb-2011

Tested by: Dell Inc.

Software Availability: Apr-2011



Hardware

CPU Name: Intel Xeon X5687
 CPU Characteristics: Intel Turbo Boost Technology up to 3.86 GHz
 CPU MHz: 3600
 FPU: Integrated
 CPU(s) enabled: 8 cores, 2 chips, 4 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: ReiserFS
 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: 1 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>71.7</u>	<u>190</u>	71.7	190	70.9	192	<u>71.3</u>	<u>191</u>	70.9	192	71.3	191
416.gamess	<u>716</u>	<u>27.4</u>	713	27.4	717	27.3	608	32.2	610	32.1	<u>609</u>	<u>32.2</u>
433.milc	155	59.1	<u>155</u>	<u>59.0</u>	156	59.0	154	59.6	154	59.8	<u>154</u>	<u>59.7</u>
434.zeusmp	<u>83.3</u>	<u>109</u>	83.3	109	83.3	109	<u>83.3</u>	<u>109</u>	83.3	109	83.3	109
435.gromacs	282	25.4	<u>282</u>	<u>25.4</u>	283	25.2	263	27.1	<u>264</u>	<u>27.1</u>	264	27.0
436.cactusADM	<u>49.5</u>	<u>241</u>	49.5	241	49.5	241	<u>49.5</u>	<u>241</u>	49.5	241	49.5	241
437.leslie3d	74.4	126	78.4	120	<u>77.6</u>	<u>121</u>	74.4	126	78.4	120	<u>77.6</u>	<u>121</u>
444.namd	356	22.5	<u>356</u>	<u>22.5</u>	356	22.6	349	23.0	<u>350</u>	<u>22.9</u>	350	22.9
447.dealII	<u>247</u>	<u>46.4</u>	246	46.4	247	46.4	<u>247</u>	<u>46.4</u>	246	46.4	247	46.4
450.soplex	226	36.9	<u>226</u>	<u>36.8</u>	227	36.8	226	36.9	<u>226</u>	<u>36.8</u>	227	36.8
453.povray	148	35.8	148	35.9	<u>148</u>	<u>35.9</u>	118	45.1	<u>117</u>	<u>45.4</u>	117	45.5
454.calculix	<u>242</u>	<u>34.1</u>	241	34.2	244	33.8	<u>214</u>	<u>38.5</u>	214	38.5	214	38.5
459.GemsFDTD	139	76.2	118	89.7	<u>137</u>	<u>77.3</u>	<u>110</u>	<u>96.9</u>	103	103	110	96.5
465.tonto	340	29.0	<u>341</u>	<u>28.9</u>	342	28.8	<u>255</u>	<u>38.6</u>	256	38.5	255	38.6
470.lbm	<u>48.2</u>	<u>285</u>	47.6	289	48.6	283	77.0	178	<u>78.0</u>	<u>176</u>	78.0	176
481.wrf	204	54.8	204	54.8	<u>204</u>	<u>54.8</u>	204	54.8	204	54.8	<u>204</u>	<u>54.8</u>
482.sphinx3	<u>327</u>	<u>59.6</u>	326	59.8	329	59.2	283	68.9	297	65.6	<u>283</u>	<u>68.8</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
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.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

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Base Optimization Flags (Continued)

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

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`

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Peak Optimization Flags (Continued)

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

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.20110308.html>



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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>
- <http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20110308.xml>

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