



SPEC® CFP2006 Result

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Dell Inc.

SPECfp®2006 = 36.1

PowerEdge R210 II (Intel Xeon E3-1220L, 2.20 GHz)

SPECfp_base2006 = 35.2

CPU2006 license: 55

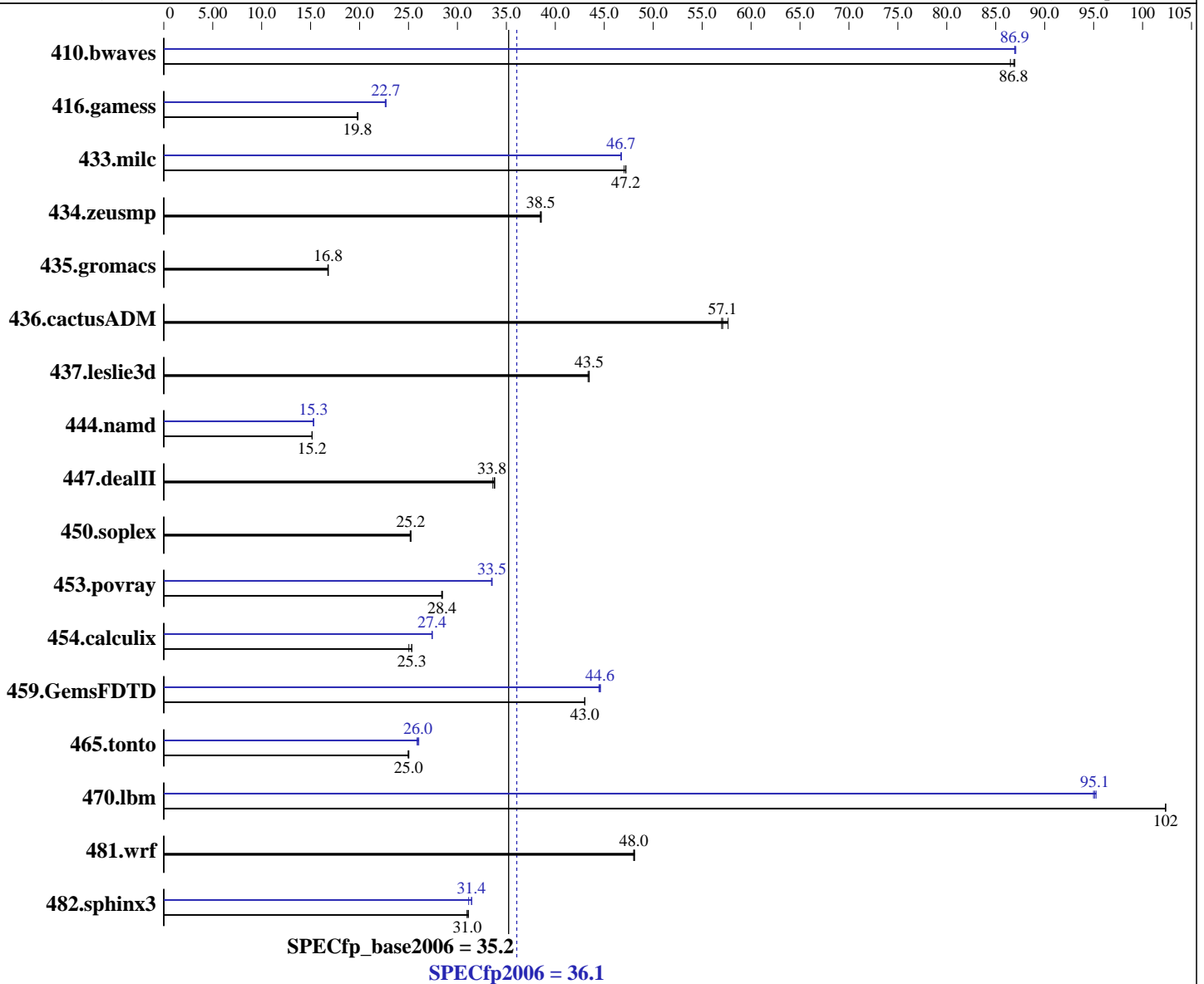
Test date: Mar-2011

Test sponsor: Dell Inc.

Hardware Availability: May-2011

Tested by: Dell Inc.

Software Availability: Apr-2011



Hardware

CPU Name: Intel Xeon E3-1220L
 CPU Characteristics: Intel Turbo Boost Technology up to 3.40 GHz
 CPU MHz: 2200
 FPU: Integrated
 CPU(s) enabled: 2 cores, 1 chip, 2 cores/chip, 2 threads/core
 CPU(s) orderable: 1 chip
 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 Alpha Build 20110105
 Auto Parallel: Yes
 File System: ext3
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit

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L3 Cache: 3 MB I+D on chip per chip
Other Cache: None
Memory: 8 GB (4 x 2 GB 2Rx8 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	157	86.5	156	86.9	<u>157</u>	<u>86.8</u>	156	87.1	<u>156</u>	<u>86.9</u>	156	86.9
416.gamess	990	19.8	987	19.8	<u>989</u>	<u>19.8</u>	<u>863</u>	<u>22.7</u>	863	22.7	865	22.6
433.milc	195	47.0	194	47.2	<u>194</u>	<u>47.2</u>	196	46.7	<u>196</u>	<u>46.7</u>	197	46.7
434.zeusmp	236	38.6	<u>236</u>	<u>38.5</u>	237	38.5	236	38.6	<u>236</u>	<u>38.5</u>	237	38.5
435.gromacs	426	16.8	425	16.8	<u>425</u>	<u>16.8</u>	426	16.8	425	16.8	<u>425</u>	<u>16.8</u>
436.cactusADM	207	57.7	<u>209</u>	<u>57.1</u>	210	57.0	207	57.7	<u>209</u>	<u>57.1</u>	210	57.0
437.leslie3d	216	43.5	<u>216</u>	<u>43.5</u>	217	43.3	216	43.5	<u>216</u>	<u>43.5</u>	217	43.3
444.namd	529	15.1	529	15.2	<u>529</u>	<u>15.2</u>	524	15.3	524	15.3	<u>524</u>	<u>15.3</u>
447.dealII	338	33.8	340	33.6	<u>339</u>	<u>33.8</u>	338	33.8	340	33.6	<u>339</u>	<u>33.8</u>
450.soplex	330	25.2	<u>330</u>	<u>25.2</u>	331	25.2	330	25.2	<u>330</u>	<u>25.2</u>	331	25.2
453.povray	187	28.5	187	28.4	<u>187</u>	<u>28.4</u>	<u>159</u>	<u>33.5</u>	159	33.5	159	33.5
454.calculix	326	25.3	<u>326</u>	<u>25.3</u>	329	25.0	301	27.4	<u>301</u>	<u>27.4</u>	301	27.4
459.GemsFDTD	247	43.0	<u>247</u>	<u>43.0</u>	247	43.0	<u>238</u>	<u>44.6</u>	239	44.5	238	44.6
465.tonto	<u>394</u>	<u>25.0</u>	393	25.0	394	25.0	378	26.1	380	25.9	<u>379</u>	<u>26.0</u>
470.lbm	134	102	<u>134</u>	<u>102</u>	134	102	<u>144</u>	<u>95.1</u>	144	95.3	145	95.0
481.wrf	232	48.1	233	48.0	<u>233</u>	<u>48.0</u>	232	48.1	233	48.0	<u>233</u>	<u>48.0</u>
482.sphinx3	629	31.0	626	31.1	<u>629</u>	<u>31.0</u>	626	31.1	<u>620</u>	<u>31.4</u>	620	31.5

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)
Logical Processor = Disabled (Default = Enabled)



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General Notes

OMP_NUM_THREADS set to number of cores
The Dell PowerEdge R210 II and the Bull NovaScale R410B F2 models are electronically equivalent. The results have been measured on a Dell PowerEdge R210 II 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:

-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
-ansi-alias

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Base Optimization Flags (Continued)

C++ benchmarks:

-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias

Fortran benchmarks:

-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Benchmarks using both Fortran and C:

-xAVX -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: -xAVX(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: -xAVX(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: -xAVX -ipo -O3 -no-prec-div -unroll2 -ansi-alias
-parallel

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Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: -xAVX(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: -xAVX(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: -xAVX -ipo -O3 -no-prec-div -opt-prefetch -parallel
-static

416.gamess: -xAVX(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: -xAVX(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: -xAVX(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: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xAVX -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

481.wrf: basepeak = yes



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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>

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.20110524.00.xml>

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For other inquiries, please contact webmaster@spec.org.

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