



# SPEC<sup>®</sup> CFP2006 Result

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Dell Inc.

SPECfp<sup>®</sup>\_rate2006 = 262

PowerEdge T610 (Intel Xeon X5675, 3.06 GHz)

SPECfp\_rate\_base2006 = 256

CPU2006 license: 55

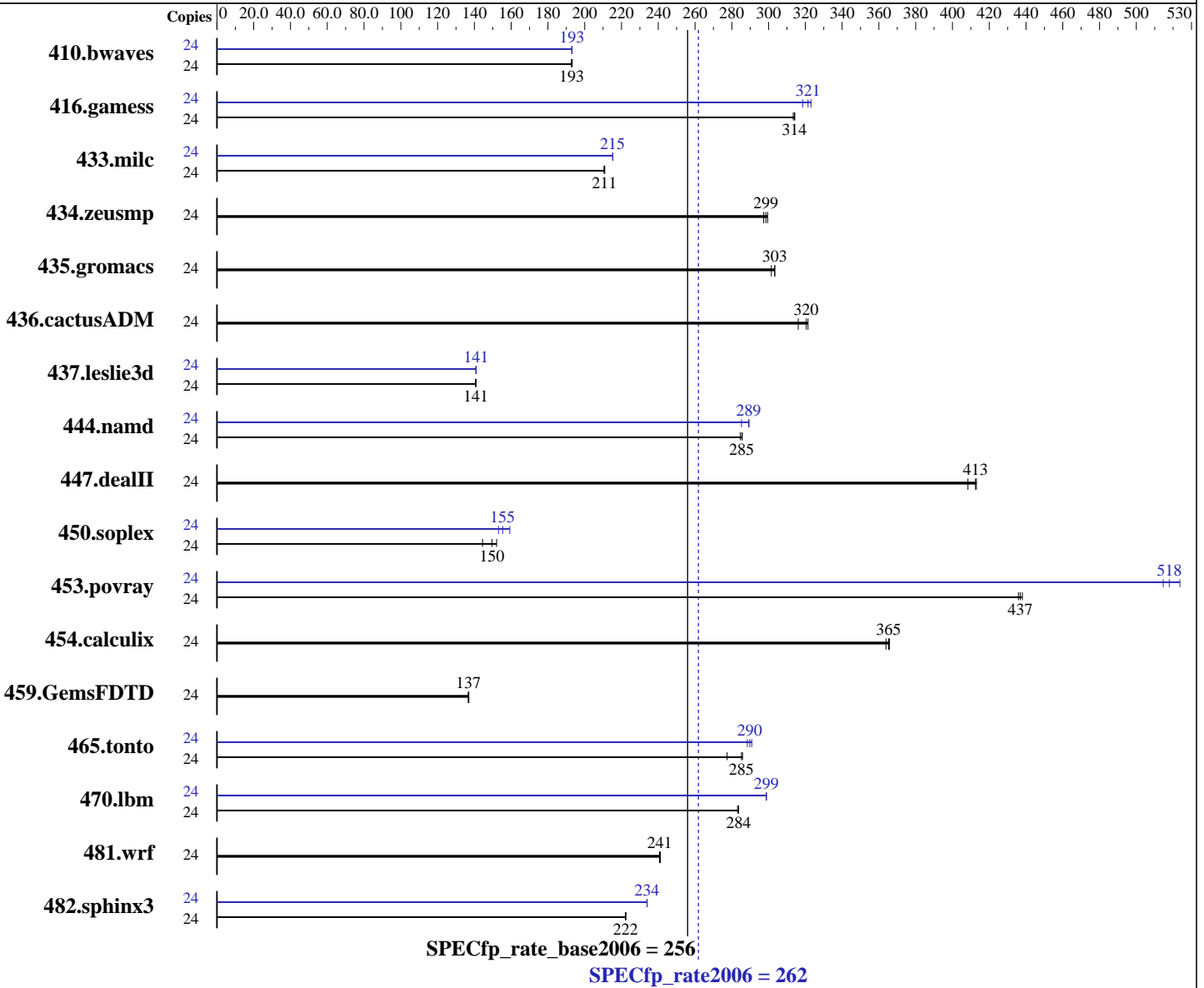
Test date: Jun-2011

Test sponsor: Dell Inc.

Hardware Availability: Feb-2011

Tested by: Dell Inc.

Software Availability: Jan-2011



### Hardware

CPU Name: Intel Xeon X5675  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.46 GHz  
 CPU MHz: 3067  
 FPU: Integrated  
 CPU(s) enabled: 12 cores, 2 chips, 6 cores/chip, 2 threads/core  
 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: 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 12.0.1.116 Build 20101116  
 Auto Parallel: No  
 File System: ext3  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit

Continued on next page



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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						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	24	1688	193	<b><u>1690</u></b>	<b><u>193</u></b>	1692	193	24	1689	193	<b><u>1689</u></b>	<b><u>193</u></b>	1691	193
416.gamess	24	1495	314	<b><u>1496</u></b>	<b><u>314</u></b>	1499	313	24	1454	323	1475	319	<b><u>1462</u></b>	<b><u>321</u></b>
433.milc	24	1045	211	1047	210	<b><u>1045</u></b>	<b><u>211</u></b>	24	<b><u>1024</u></b>	<b><u>215</u></b>	1024	215	1023	215
434.zeusmp	24	735	297	<b><u>732</u></b>	<b><u>299</u></b>	729	299	24	735	297	<b><u>732</u></b>	<b><u>299</u></b>	729	299
435.gromacs	24	568	301	<b><u>565</u></b>	<b><u>303</u></b>	565	303	24	568	301	<b><u>565</u></b>	<b><u>303</u></b>	565	303
436.cactusADM	24	907	316	<b><u>895</u></b>	<b><u>320</u></b>	892	321	24	907	316	<b><u>895</u></b>	<b><u>320</u></b>	892	321
437.leslie3d	24	<b><u>1602</u></b>	<b><u>141</u></b>	1604	141	1601	141	24	1603	141	<b><u>1601</u></b>	<b><u>141</u></b>	1600	141
444.namd	24	<b><u>674</u></b>	<b><u>285</u></b>	674	286	676	285	24	665	289	675	285	<b><u>666</u></b>	<b><u>289</u></b>
447.dealII	24	665	413	672	408	<b><u>666</u></b>	<b><u>413</u></b>	24	665	413	672	408	<b><u>666</u></b>	<b><u>413</u></b>
450.soplex	24	1386	144	<b><u>1338</u></b>	<b><u>150</u></b>	1316	152	24	1307	153	<b><u>1288</u></b>	<b><u>155</u></b>	1257	159
453.povray	24	293	436	292	438	<b><u>292</u></b>	<b><u>437</u></b>	24	248	515	<b><u>247</u></b>	<b><u>518</u></b>	244	524
454.calculix	24	541	366	544	364	<b><u>542</u></b>	<b><u>365</u></b>	24	541	366	544	364	<b><u>542</u></b>	<b><u>365</u></b>
459.GemsFDTD	24	<b><u>1861</u></b>	<b><u>137</u></b>	1863	137	1859	137	24	<b><u>1861</u></b>	<b><u>137</u></b>	1863	137	1859	137
465.tonto	24	851	277	826	286	<b><u>828</u></b>	<b><u>285</u></b>	24	819	288	812	291	<b><u>815</u></b>	<b><u>290</u></b>
470.lbm	24	<b><u>1162</u></b>	<b><u>284</u></b>	1165	283	1162	284	24	1104	299	1104	299	<b><u>1104</u></b>	<b><u>299</u></b>
481.wrf	24	1114	241	<b><u>1113</u></b>	<b><u>241</u></b>	1112	241	24	1114	241	<b><u>1113</u></b>	<b><u>241</u></b>	1112	241
482.sphinx3	24	2105	222	<b><u>2105</u></b>	<b><u>222</u></b>	2103	222	24	<b><u>2000</u></b>	<b><u>234</u></b>	1999	234	2000	234

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

## Submit Notes

The config file option 'submit' was used.  
numactl was used to bind copies to the cores

## 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 10800 > /proc/sys/vm/nr\_hugepages  
export HUGETLB\_MORECORE=yes  
export LD\_PRELOAD=/usr/lib64/libhugetlbfs.so



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## Platform Notes

BIOS Settings:

Power Management = Maximum Performance (Default = Active Power Controller)

Data Reuse = Disabled (Default = Enabled)

## General Notes

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.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



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## Base Optimization Flags

C benchmarks:

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

C++ benchmarks:

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

Fortran benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static

Benchmarks using both Fortran and C:

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

## 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

Continued on next page



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## Peak Portability Flags (Continued)

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

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) -opt-malloc-options=3  
-ansi-alias -opt-prefetch -static -auto-ilp32

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

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.dealII: basepeak = yes

450.soplex: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -opt-malloc-options=3  
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

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(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -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: -xSSE4.2 -ipo -O3 -no-prec-div  
-B /usr/share/libhugetlbfs/ -Wl,-melf\_x86\_64 -Wl,-hugetlbfs-link=BDT

459.GemsFDTD: basepeak = yes

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## Peak Optimization Flags (Continued)

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) -unroll4 -auto  
-inline-alloc -opt-malloc-options=3  
-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: basepeak = yes

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>

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](mailto:webmaster@spec.org).

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