



# SPEC® CFP2006 Result

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Dell Inc.

SPECfp®2006 = 53.9

PowerEdge R910 (Intel Xeon X7542, 2.67 GHz)

SPECfp\_base2006 = 50.5

CPU2006 license: 55

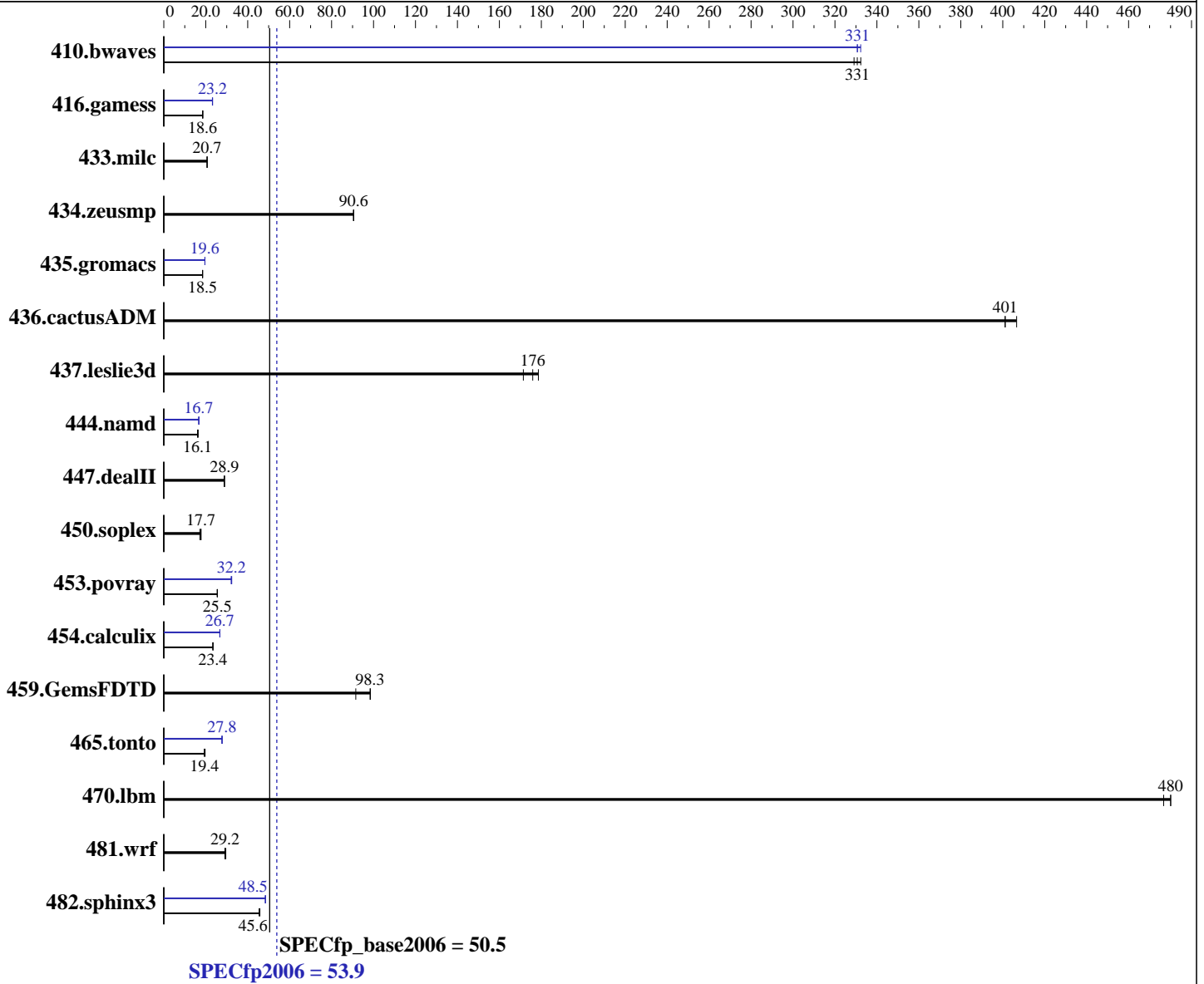
Test date: Apr-2011

Test sponsor: Dell Inc.

Hardware Availability: Jul-2011

Tested by: Dell Inc.

Software Availability: Apr-2011



**Hardware**

CPU Name: Intel Xeon X7542  
CPU Characteristics: Intel Turbo Boost Technology up to 2.80 GHz  
CPU MHz: 2666  
FPU: Integrated  
CPU(s) enabled: 24 cores, 4 chips, 6 cores/chip  
CPU(s) orderable: 2,4 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: 18 MB I+D on chip per chip  
Other Cache: None  
Memory: 512 GB (64 x 8 GB 4Rx8 PC3-8500R-7, ECC, running at 978 MHz)  
Disk Subsystem: 1 x 500 GB 7200 RPM SAS 6Gb  
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	41.3	329	<b>41.1</b>	<b>331</b>	40.9	332	40.9	332	<b>41.1</b>	<b>331</b>	41.1	331
416.gamess	1059	18.5	<b>1055</b>	<b>18.6</b>	1052	18.6	845	23.2	842	23.2	<b>843</b>	<b>23.2</b>
433.milc	444	20.7	<b>444</b>	<b>20.7</b>	445	20.6	444	20.7	<b>444</b>	<b>20.7</b>	445	20.6
434.zeusmp	100	90.6	<b>100</b>	<b>90.6</b>	101	90.4	100	90.6	<b>100</b>	<b>90.6</b>	101	90.4
435.gromacs	385	18.5	387	18.5	<b>387</b>	<b>18.5</b>	<b>364</b>	<b>19.6</b>	364	19.6	364	19.6
436.cactusADM	<b>29.8</b>	<b>401</b>	29.4	407	29.8	401	<b>29.8</b>	<b>401</b>	29.4	407	29.8	401
437.leslie3d	52.6	179	<b>53.4</b>	<b>176</b>	54.8	171	52.6	179	<b>53.4</b>	<b>176</b>	54.8	171
444.namd	<b>497</b>	<b>16.1</b>	489	16.4	498	16.1	<b>480</b>	<b>16.7</b>	480	16.7	480	16.7
447.dealII	<b>396</b>	<b>28.9</b>	395	28.9	396	28.9	<b>396</b>	<b>28.9</b>	395	28.9	396	28.9
450.soplex	486	17.2	470	17.7	<b>472</b>	<b>17.7</b>	486	17.2	470	17.7	<b>472</b>	<b>17.7</b>
453.povray	208	25.6	209	25.4	<b>208</b>	<b>25.5</b>	164	32.4	165	32.2	<b>165</b>	<b>32.2</b>
454.calculix	353	23.4	351	23.5	<b>353</b>	<b>23.4</b>	309	26.7	<b>309</b>	<b>26.7</b>	308	26.8
459.GemsFDTD	116	91.5	<b>108</b>	<b>98.3</b>	108	98.5	116	91.5	<b>108</b>	<b>98.3</b>	108	98.5
465.tonto	<b>508</b>	<b>19.4</b>	500	19.7	508	19.4	<b>354</b>	<b>27.8</b>	355	27.7	354	27.8
470.lbm	<b>28.6</b>	<b>480</b>	28.8	477	28.6	480	<b>28.6</b>	<b>480</b>	28.8	477	28.6	480
481.wrf	378	29.6	<b>383</b>	<b>29.2</b>	383	29.2	378	29.6	<b>383</b>	<b>29.2</b>	383	29.2
482.sphinx3	425	45.8	429	45.5	<b>427</b>	<b>45.6</b>	403	48.4	<b>402</b>	<b>48.5</b>	402	48.5

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)  
Node Interleaving = Enabled (Default = Disabled)



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## General Notes

The Dell PowerEdge R910 and the Bull NovaScale R480 F2 models are electronically equivalent. The results have been measured on a Dell PowerEdge R910 model.  
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.deall: -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: basepeak = yes

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

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## Peak Optimization Flags (Continued)

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:

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: basepeak = yes

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>

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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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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