



# SPEC® CFP2006 Result

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Dell Inc.

SPECfp®\_rate2006 = 189

PowerEdge R810 (Intel Xeon L7545, 1.87 GHz)

SPECfp\_rate\_base2006 = 193

CPU2006 license: 55

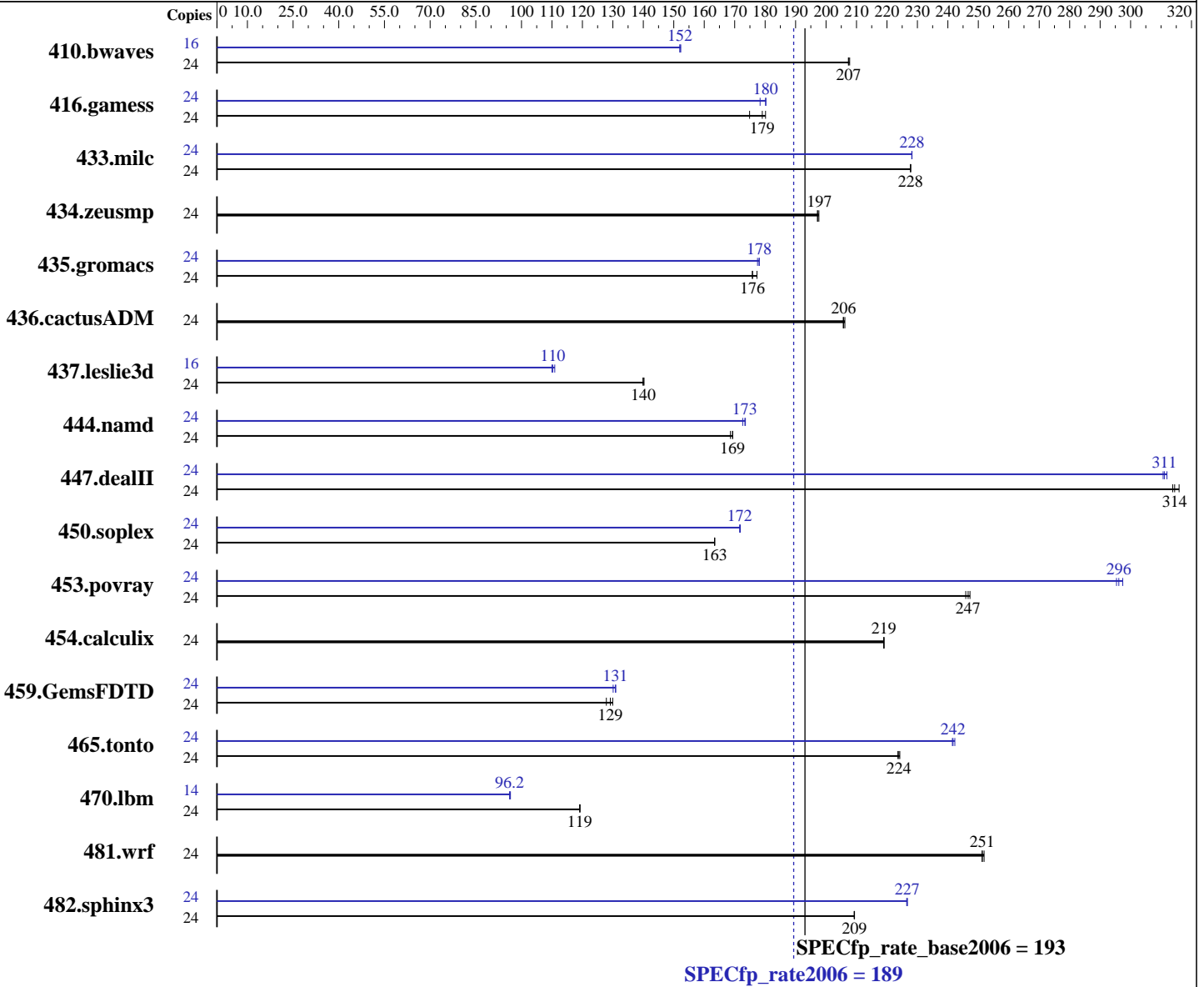
Test date: Mar-2010

Test sponsor: Dell Inc.

Hardware Availability: Mar-2010

Tested by: Dell Inc.

Software Availability: Dec-2009



### Hardware

CPU Name: Intel Xeon L7545  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.53 GHz  
 CPU MHz: 1866  
 FPU: Integrated  
 CPU(s) enabled: 12 cores, 2 chips, 6 cores/chip, 2 threads/core  
 CPU(s) orderable: 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: Red Hat Enterprise Linux 5 (x86\_64) Update 4 errata kernel (RHEL 5.4.z) kernel-2.6.18-164.9.1.el5.x86\_64  
 Compiler: Intel C++ and Fortran Professional Compiler for IA32 and Intel 64, Version 11.1 Build 20091130 Package ID: l\_cproc\_p\_11.1.064, l\_cprof\_p\_11.1.064  
 Auto Parallel: No  
 File System: ext3

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L3 Cache: 18 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 128 GB (32 x 4 GB DDR3-1066 QR RDIMM)  
 Disk Subsystem: 6 x 73 GB 15000 RPM SAS  
 Other Hardware: None

System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit  
 Peak Pointers: 32/64-bit  
 Other Software: Binutils 2.18.50.0.7.20080502

## Results Table

| Benchmark     | Base   |             |            |             |            |             |            | Peak   |             |            |             |             |             |            |
|---------------|--------|-------------|------------|-------------|------------|-------------|------------|--------|-------------|------------|-------------|-------------|-------------|------------|
|               | Copies | Seconds     | Ratio      | Seconds     | Ratio      | Seconds     | Ratio      | Copies | Seconds     | Ratio      | Seconds     | Ratio       | Seconds     | Ratio      |
| 410.bwaves    | 24     | 1570        | 208        | 1573        | 207        | <u>1572</u> | <u>207</u> | 16     | 1431        | 152        | 1428        | 152         | <u>1430</u> | <u>152</u> |
| 416.gamess    | 24     | 2687        | 175        | 2609        | 180        | <u>2624</u> | <u>179</u> | 24     | <u>2609</u> | <u>180</u> | 2635        | 178         | 2607        | 180        |
| 433.milc      | 24     | 967         | 228        | <u>967</u>  | <u>228</u> | 967         | 228        | 24     | 965         | 228        | <u>965</u>  | <u>228</u>  | 966         | 228        |
| 434.zeusmp    | 24     | <u>1107</u> | <u>197</u> | 1105        | 198        | 1107        | 197        | 24     | <u>1107</u> | <u>197</u> | 1105        | 198         | 1107        | 197        |
| 435.gromacs   | 24     | 975         | 176        | <u>974</u>  | <u>176</u> | 966         | 177        | 24     | 962         | 178        | 965         | 177         | <u>963</u>  | <u>178</u> |
| 436.cactusADM | 24     | <u>1394</u> | <u>206</u> | 1391        | 206        | 1395        | 206        | 24     | <u>1394</u> | <u>206</u> | 1391        | 206         | 1395        | 206        |
| 437.leslie3d  | 24     | <u>1611</u> | <u>140</u> | 1609        | 140        | 1613        | 140        | 16     | 1367        | 110        | <u>1364</u> | <u>110</u>  | 1356        | 111        |
| 444.namd      | 24     | 1142        | 169        | <u>1137</u> | <u>169</u> | 1137        | 169        | 24     | 1115        | 173        | <u>1110</u> | <u>173</u>  | 1109        | 174        |
| 447.dealII    | 24     | <u>873</u>  | <u>314</u> | 869         | 316        | 875         | 314        | 24     | <u>882</u>  | <u>311</u> | 884         | 311         | 880         | 312        |
| 450.soplex    | 24     | <u>1225</u> | <u>163</u> | 1224        | 163        | 1225        | 163        | 24     | 1165        | 172        | <u>1166</u> | <u>172</u>  | 1166        | 172        |
| 453.povray    | 24     | 516         | 247        | 519         | 246        | <u>518</u>  | <u>247</u> | 24     | <u>431</u>  | <u>296</u> | 432         | 295         | 429         | 297        |
| 454.calculix  | 24     | 904         | 219        | <u>904</u>  | <u>219</u> | 904         | 219        | 24     | 904         | 219        | <u>904</u>  | <u>219</u>  | 904         | 219        |
| 459.GemsFDTD  | 24     | 1960        | 130        | <u>1971</u> | <u>129</u> | 1991        | 128        | 24     | <u>1946</u> | <u>131</u> | 1957        | 130         | 1945        | 131        |
| 465.tonto     | 24     | 1053        | 224        | <u>1055</u> | <u>224</u> | 1056        | 224        | 24     | 978         | 241        | <u>977</u>  | <u>242</u>  | 975         | 242        |
| 470.lbm       | 24     | 2766        | 119        | <u>2768</u> | <u>119</u> | 2768        | 119        | 14     | 1996        | 96.4       | <u>2001</u> | <u>96.2</u> | 2001        | 96.1       |
| 481.wrf       | 24     | <u>1067</u> | <u>251</u> | 1067        | 251        | 1064        | 252        | 24     | <u>1067</u> | <u>251</u> | 1067        | 251         | 1064        | 252        |
| 482.sphinx3   | 24     | <u>2235</u> | <u>209</u> | 2236        | 209        | 2234        | 209        | 24     | 2063        | 227        | 2065        | 226         | <u>2064</u> | <u>227</u> |

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

## Platform Notes

vm.zone\_reclaim\_mode = 1 in /etc/sysctl.conf file  
BIOS Settings:  
Power Management = Maximum Performance (Default = Active Power Controller)



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## 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

C++ benchmarks:

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

Fortran benchmarks:

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

Benchmarks using both Fortran and C:

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



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## 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  
 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) -static(pass 2) -prof-use(pass 2)  
 -fno-alias -opt-prefetch

470.lbm: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
 -no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
 -opt-malloc-options=3 -ansi-alias -auto-ilp32

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## Peak Optimization Flags (Continued)

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

### C++ benchmarks:

444.namd: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-fno-alias -auto-ilp32

447.dealII: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-unroll2 -ansi-alias -scalar-rep-

450.soplex: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-opt-malloc-options=3

453.povray: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-unroll4 -ansi-alias

### Fortran benchmarks:

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

416.gamess: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-unroll2 -Ob0 -ansi-alias -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: -xSSE4.2 -ipo -O3 -no-prec-div -static

459.GemsFDTD: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-unroll2 -Ob0

465.tonto: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-unroll4 -auto -inline-calloc -opt-malloc-options=3

### 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) -static(pass 2) -prof-use(pass 2)  
-opt-prefetch -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

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## Peak Optimization Flags (Continued)

481.wrf: basepeak = yes

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic11.1-linux64-revE.20100330.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/Intel-ic11.1-linux64-revE.20100330.xml>

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

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