



# SPEC<sup>®</sup> CFP2006 Result

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## Dell Inc.

### SPECfp<sup>®</sup>\_rate2006 = 76.2

### PowerEdge M600 (Intel Xeon E5440, 2.83 GHz)

### SPECfp\_rate\_base2006 = 70.5

CPU2006 license: 55

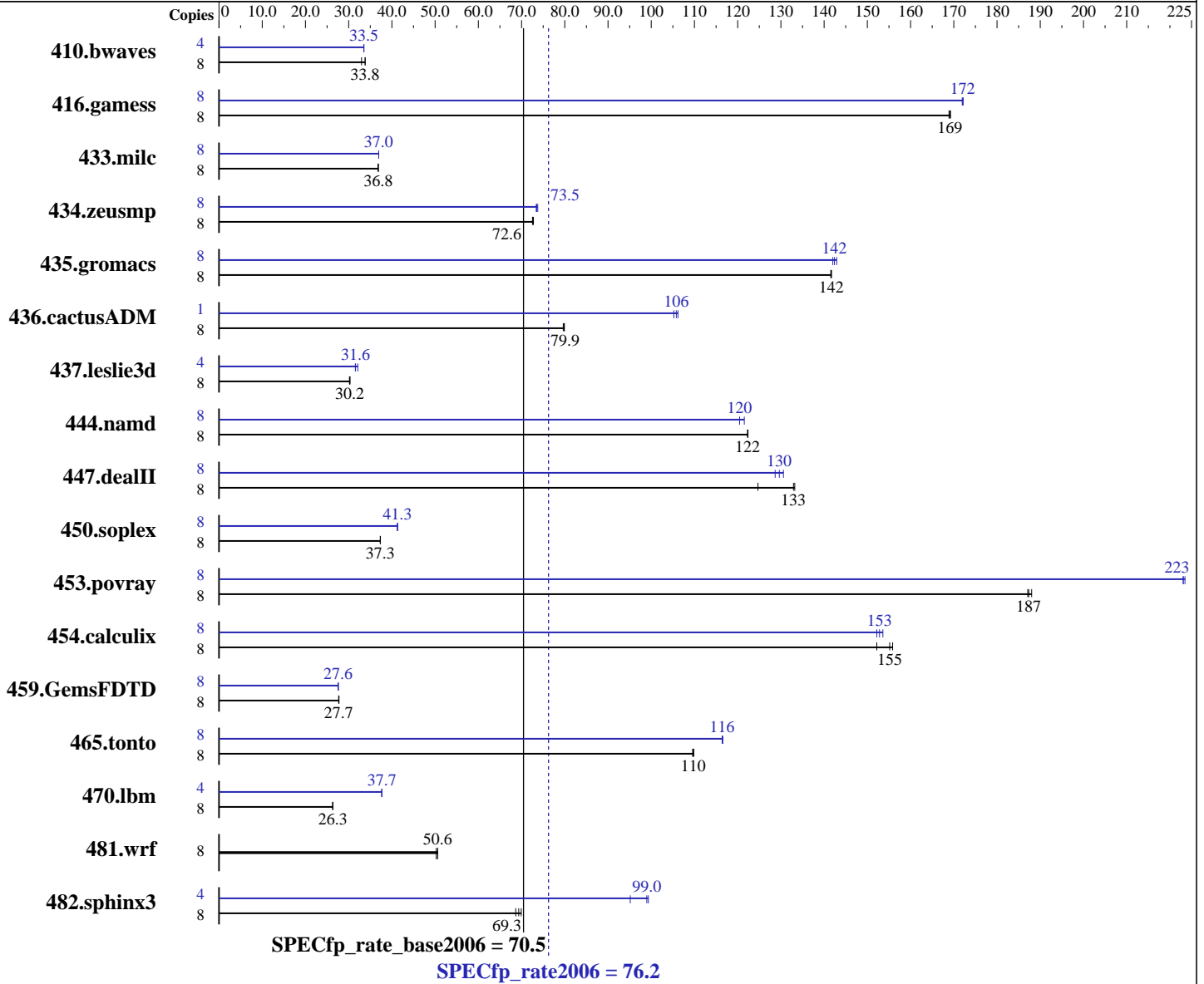
Test date: Sep-2008

Test sponsor: Dell Inc.

Hardware Availability: Sep-2008

Tested by: Dell Inc.

Software Availability: Nov-2008



#### Hardware

CPU Name: Intel Xeon E5440  
 CPU Characteristics: 2833  
 CPU MHz: 2833  
 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: 12 MB I+D on chip per chip, 6 MB shared / 2 cores

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#### Software

Operating System: SUSE Linux Enterprise Server 10 (x86\_64) SP2, Kernel 2.6.16-60.0.21-smp  
 Compiler: Intel C++ and Fortran Compiler 11.0 for Linux Build 20080730 Package ID: l\_cproc\_b\_11.0.042, l\_fproc\_b\_11.0.042  
 Auto Parallel: Yes  
 File System: ReiserFS  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit

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L3 Cache: None  
Other Cache: None  
Memory: 16 GB (4 x 4 GB 667 MHz ECC CL5 FB-DIMM)  
Disk Subsystem: 1 x 80 GB 5400 RPM SATA  
Other Hardware: None

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    | 8      | 3297              | 33.0              | <b><u>3216</u></b> | <b><u>33.8</u></b> | 3214               | 33.8               | 4      | 1621               | 33.5               | <b><u>1623</u></b> | <b><u>33.5</u></b> | 1623               | 33.5               |
| 416.gamess    | 8      | 926               | 169               | 927                | 169                | <b><u>926</u></b>  | <b><u>169</u></b>  | 8      | 911                | 172                | 910                | 172                | <b><u>910</u></b>  | <b><u>172</u></b>  |
| 433.milc      | 8      | 1994              | 36.8              | <b><u>1994</u></b> | <b><u>36.8</u></b> | 1994               | 36.8               | 8      | 1988               | 36.9               | <b><u>1987</u></b> | <b><u>37.0</u></b> | 1987               | 37.0               |
| 434.zeusmp    | 8      | 1001              | 72.7              | <b><u>1002</u></b> | <b><u>72.6</u></b> | 1004               | 72.5               | 8      | <b><u>990</u></b>  | <b><u>73.5</u></b> | 987                | 73.7               | 992                | 73.4               |
| 435.gromacs   | 8      | <b><u>403</u></b> | <b><u>142</u></b> | 404                | 142                | 403                | 142                | 8      | 400                | 143                | 402                | 142                | <b><u>401</u></b>  | <b><u>142</u></b>  |
| 436.cactusADM | 8      | 1200              | 79.6              | <b><u>1197</u></b> | <b><u>79.9</u></b> | 1196               | 79.9               | 1      | <b><u>113</u></b>  | <b><u>106</u></b>  | 113                | 106                | 114                | 105                |
| 437.leslie3d  | 8      | 2480              | 30.3              | <b><u>2487</u></b> | <b><u>30.2</u></b> | 2492               | 30.2               | 4      | <b><u>1191</u></b> | <b><u>31.6</u></b> | 1171               | 32.1               | 1192               | 31.5               |
| 444.namd      | 8      | 524               | 122               | 525                | 122                | <b><u>524</u></b>  | <b><u>122</u></b>  | 8      | 533                | 120                | <b><u>533</u></b>  | <b><u>120</u></b>  | 528                | 122                |
| 447.dealII    | 8      | <b><u>689</u></b> | <b><u>133</u></b> | 734                | 125                | 687                | 133                | 8      | 701                | 131                | 711                | 129                | <b><u>706</u></b>  | <b><u>130</u></b>  |
| 450.soplex    | 8      | 1788              | 37.3              | 1786               | 37.3               | <b><u>1788</u></b> | <b><u>37.3</u></b> | 8      | 1615               | 41.3               | <b><u>1617</u></b> | <b><u>41.3</u></b> | 1617               | 41.3               |
| 453.povray    | 8      | <b><u>227</u></b> | <b><u>187</u></b> | 227                | 187                | 226                | 188                | 8      | 191                | 223                | 190                | 223                | <b><u>191</u></b>  | <b><u>223</u></b>  |
| 454.calculix  | 8      | 434               | 152               | 423                | 156                | <b><u>425</u></b>  | <b><u>155</u></b>  | 8      | <b><u>432</u></b>  | <b><u>153</u></b>  | 430                | 154                | 434                | 152                |
| 459.GemsFDTD  | 8      | 3057              | 27.8              | 3065               | 27.7               | <b><u>3062</u></b> | <b><u>27.7</u></b> | 8      | 3078               | 27.6               | 3077               | 27.6               | <b><u>3077</u></b> | <b><u>27.6</u></b> |
| 465.tonto     | 8      | 717               | 110               | 718                | 110                | <b><u>717</u></b>  | <b><u>110</u></b>  | 8      | <b><u>676</u></b>  | <b><u>116</u></b>  | 675                | 117                | 676                | 116                |
| 470.lbm       | 8      | 4179              | 26.3              | <b><u>4173</u></b> | <b><u>26.3</u></b> | 4172               | 26.3               | 4      | 1459               | 37.7               | <b><u>1459</u></b> | <b><u>37.7</u></b> | 1458               | 37.7               |
| 481.wrf       | 8      | 1766              | 50.6              | 1779               | 50.2               | <b><u>1766</u></b> | <b><u>50.6</u></b> | 8      | 1766               | 50.6               | 1779               | 50.2               | <b><u>1766</u></b> | <b><u>50.6</u></b> |
| 482.sphinx3   | 8      | 2230              | 69.9              | 2271               | 68.7               | <b><u>2248</u></b> | <b><u>69.3</u></b> | 4      | 819                | 95.2               | <b><u>788</u></b>  | <b><u>99.0</u></b> | 785                | 99.3               |

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.

## Operating System Notes

'ulimit -s unlimited' was used to set the stack size to unlimited prior to run

## Platform Notes

BIOS Settings:  
Hardware Prefetcher = Disabled (Default = Enabled)  
Adjacent Cache Line Prefetch = Disabled (Default = Enabled)



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CPU2006 license: 55

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## General Notes

All benchmarks compiled in 64-bit mode except 437.leslie3d, 450.soplex and 482.sphinx3, at peak, are compiled in 32-bit mode taskset was used to bind processes to cores except for 436.cactusADM peak  
OMP\_NUM\_THREADS set to number of processors  
KMP\_AFFINITY set to "physical,0"  
KMP\_STACKSIZE set to 64M

## Base Compiler Invocation

C benchmarks:

icc

C++ benchmarks:

icpc

Fortran benchmarks:

ifort

Benchmarks using both Fortran and C:

icc ifort

## 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:

-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

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## Base Optimization Flags (Continued)

C++ benchmarks:

-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

Fortran benchmarks:

-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

Benchmarks using both Fortran and C:

-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

## Peak Compiler Invocation

C benchmarks (except as noted below):

icc

482.sphinx3: /opt/intel/Compiler/11.0/042/bin/ia32/icc  
-L/opt/intel/Compiler/11.0/042/ipp/ia32/lib  
-I/opt/intel/Compiler/11.0/042/ipp/ia32/include

C++ benchmarks (except as noted below):

icpc

450.soplex: /opt/intel/Compiler/11.0/042/bin/ia32/icpc  
-L/opt/intel/Compiler/11.0/042/ipp/ia32/lib  
-I/opt/intel/Compiler/11.0/042/ipp/ia32/include

Fortran benchmarks (except as noted below):

ifort

437.leslie3d: /opt/intel/Compiler/11.0/042/bin/ia32/ifort  
-L/opt/intel/Compiler/11.0/042/ipp/ia32/lib  
-I/opt/intel/Compiler/11.0/042/ipp/ia32/include

Benchmarks using both Fortran and C:

icc ifort

## 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  
444.namd: -DSPEC\_CPU\_LP64  
447.dealII: -DSPEC\_CPU\_LP64

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## Peak Portability Flags (Continued)

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

470.lbm: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch  
 -auto-ilp32

482.sphinx3: -xSSE4.1 -ipo -O3 -no-prec-div -static -unroll2

C++ benchmarks:

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

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

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

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

Fortran benchmarks:

410.bwaves: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

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

434.zeusmp: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
 -no-prec-div -static

437.leslie3d: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
 -no-prec-div -static -opt-malloc-options=3 -opt-prefetch

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## Peak Optimization Flags (Continued)

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

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -unroll4 -auto

Benchmarks using both Fortran and C:

435.gromacs: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -opt-prefetch -auto-ilp32

436.cactusADM: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -unroll2 -opt-prefetch -parallel  
-auto-ilp32

454.calculix: -xSSE4.1 -ipo -O3 -no-prec-div -static -auto-ilp32

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-ic11.0-fp-linux64-revA.20090713.05.html>

<http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20090713.06.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090713.05.xml>

<http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20090713.06.xml>

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For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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