



SPEC® CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp®2006 = 21.7

PowerEdge T610 (Intel Xeon E5502, 1.86 GHz)

SPECfp_base2006 = 20.6

CPU2006 license: 55

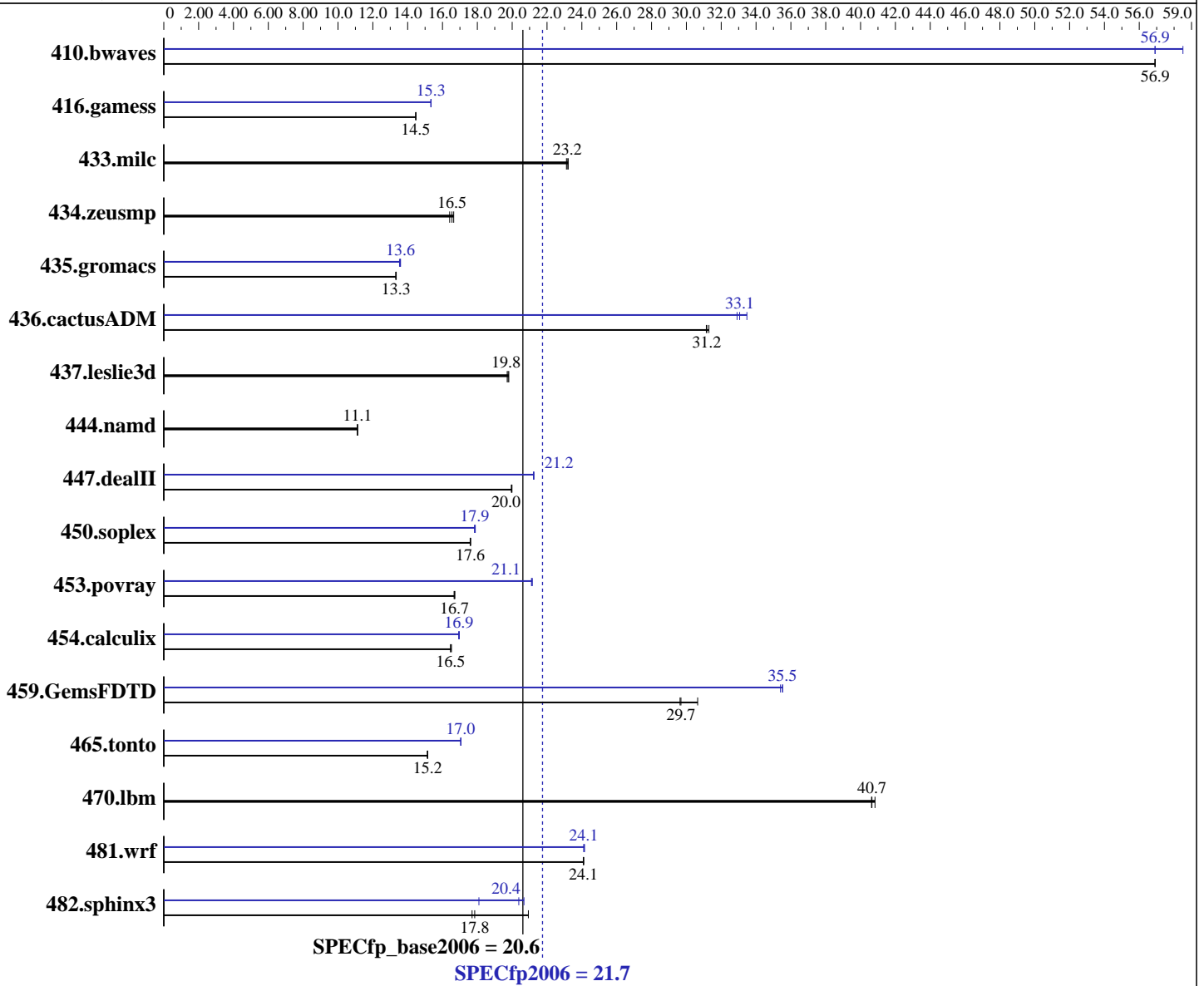
Test date: Apr-2009

Test sponsor: Dell Inc.

Hardware Availability: Mar-2009

Tested by: Dell Inc.

Software Availability: Feb-2009



Hardware

CPU Name: Intel Xeon E5502
 CPU Characteristics:
 CPU MHz: 1867
 FPU: Integrated
 CPU(s) enabled: 4 cores, 2 chips, 2 cores/chip
 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

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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 Professional 11.0 for Linux
 Build 20090131 Package ID: l_cproc_p_11.0.080, l_cprof_p_11.0.080
 Auto Parallel: Yes
 File System: ReiserFS
 System State: Run level 3 (multi-user)

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L3 Cache: 4 MB I+D on chip per chip
Other Cache: None
Memory: 24 GB (6 x 4 GB DDR3-1066 DR RDIMM downclocked to 800 MHz)
Disk Subsystem: 1 x 146 GB 15000 RPM SAS
Other Hardware: None

Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: Binutils 2.18.50.0.7.20080502

Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
|---------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------|--------------------|-------------------|--------------------|--------------------|--------------------|
| | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 239 | 56.9 | 239 | 56.9 | <u>239</u> | <u>56.9</u> | 232 | 58.5 | <u>239</u> | <u>56.9</u> | 239 | 56.9 |
| 416.gamess | 1353 | 14.5 | <u>1353</u> | <u>14.5</u> | 1354 | 14.5 | 1276 | 15.3 | 1278 | 15.3 | <u>1276</u> | <u>15.3</u> |
| 433.milc | 395 | 23.2 | 397 | 23.1 | <u>396</u> | <u>23.2</u> | 395 | 23.2 | 397 | 23.1 | <u>396</u> | <u>23.2</u> |
| 434.zeusmp | 554 | 16.4 | <u>550</u> | <u>16.5</u> | 547 | 16.6 | 554 | 16.4 | <u>550</u> | <u>16.5</u> | 547 | 16.6 |
| 435.gromacs | 536 | 13.3 | 535 | 13.3 | <u>536</u> | <u>13.3</u> | 525 | 13.6 | <u>526</u> | <u>13.6</u> | 528 | 13.5 |
| 436.cactusADM | 382 | 31.3 | 384 | 31.1 | <u>383</u> | <u>31.2</u> | 357 | 33.5 | <u>361</u> | <u>33.1</u> | 363 | 32.9 |
| 437.leslie3d | <u>476</u> | <u>19.8</u> | 477 | 19.7 | 475 | 19.8 | <u>476</u> | <u>19.8</u> | 477 | 19.7 | 475 | 19.8 |
| 444.namd | 721 | 11.1 | <u>721</u> | <u>11.1</u> | 722 | 11.1 | 721 | 11.1 | <u>721</u> | <u>11.1</u> | 722 | 11.1 |
| 447.dealII | 572 | 20.0 | <u>573</u> | <u>20.0</u> | 573 | 19.9 | 539 | 21.2 | <u>539</u> | <u>21.2</u> | 538 | 21.2 |
| 450.soplex | 473 | 17.6 | <u>474</u> | <u>17.6</u> | 474 | 17.6 | <u>467</u> | <u>17.9</u> | 466 | 17.9 | 468 | 17.8 |
| 453.povray | <u>319</u> | <u>16.7</u> | 319 | 16.7 | 318 | 16.7 | <u>252</u> | <u>21.1</u> | 252 | 21.1 | 251 | 21.2 |
| 454.calculix | 500 | 16.5 | 501 | 16.5 | <u>501</u> | <u>16.5</u> | 486 | 17.0 | <u>487</u> | <u>16.9</u> | 487 | 16.9 |
| 459.GemsFDTD | 346 | 30.6 | <u>357</u> | <u>29.7</u> | 358 | 29.6 | 299 | 35.5 | <u>299</u> | <u>35.5</u> | 300 | 35.4 |
| 465.tonto | <u>649</u> | <u>15.2</u> | 649 | 15.2 | 651 | 15.1 | 577 | 17.0 | 577 | 17.1 | <u>577</u> | <u>17.0</u> |
| 470.lbm | <u>338</u> | <u>40.7</u> | 337 | 40.8 | 338 | 40.6 | <u>338</u> | <u>40.7</u> | 337 | 40.8 | 338 | 40.6 |
| 481.wrf | 464 | 24.1 | <u>464</u> | <u>24.1</u> | 463 | 24.1 | 462 | 24.2 | 463 | 24.1 | <u>463</u> | <u>24.1</u> |
| 482.sphinx3 | 1101 | 17.7 | 931 | 20.9 | <u>1092</u> | <u>17.8</u> | <u>956</u> | <u>20.4</u> | 1077 | 18.1 | 943 | 20.7 |

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

General Notes

OMP_NUM_THREADS set to number of cores
KMP_AFFINITY set to granularity=fine,scatter
KMP_STACKSIZE set to 200M



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

C++ benchmarks:
-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

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



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Peak Compiler Invocation

C benchmarks (except as noted below):

icc

482.sphinx3: icc -m32

C++ benchmarks (except as noted below):

icpc

450.soplex: icpc -m32

Fortran benchmarks:

ifort

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
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: basepeak = yes

470.lbm: basepeak = yes

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

C++ benchmarks:

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Peak Optimization Flags (Continued)

444.namd: basepeak = yes

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- -opt-prefetch

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
-parallel

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: basepeak = yes

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 -opt-prefetch -parallel

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

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: -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 -opt-prefetch -parallel -auto-ilp32

454.calculix: -xSSE4.2 -ipo -O3 -no-prec-div -static -auto-ilp32

481.wrf: -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch
-parallel -auto-ilp32



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

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090710.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090710.xml>

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