



SPEC® CFP2006 Result

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Dell Inc.

SPECfp®2006 = 29.8

PowerEdge R910 (Intel Xeon E7520, 1.87 GHz)

SPECfp_base2006 = 28.5

CPU2006 license: 55

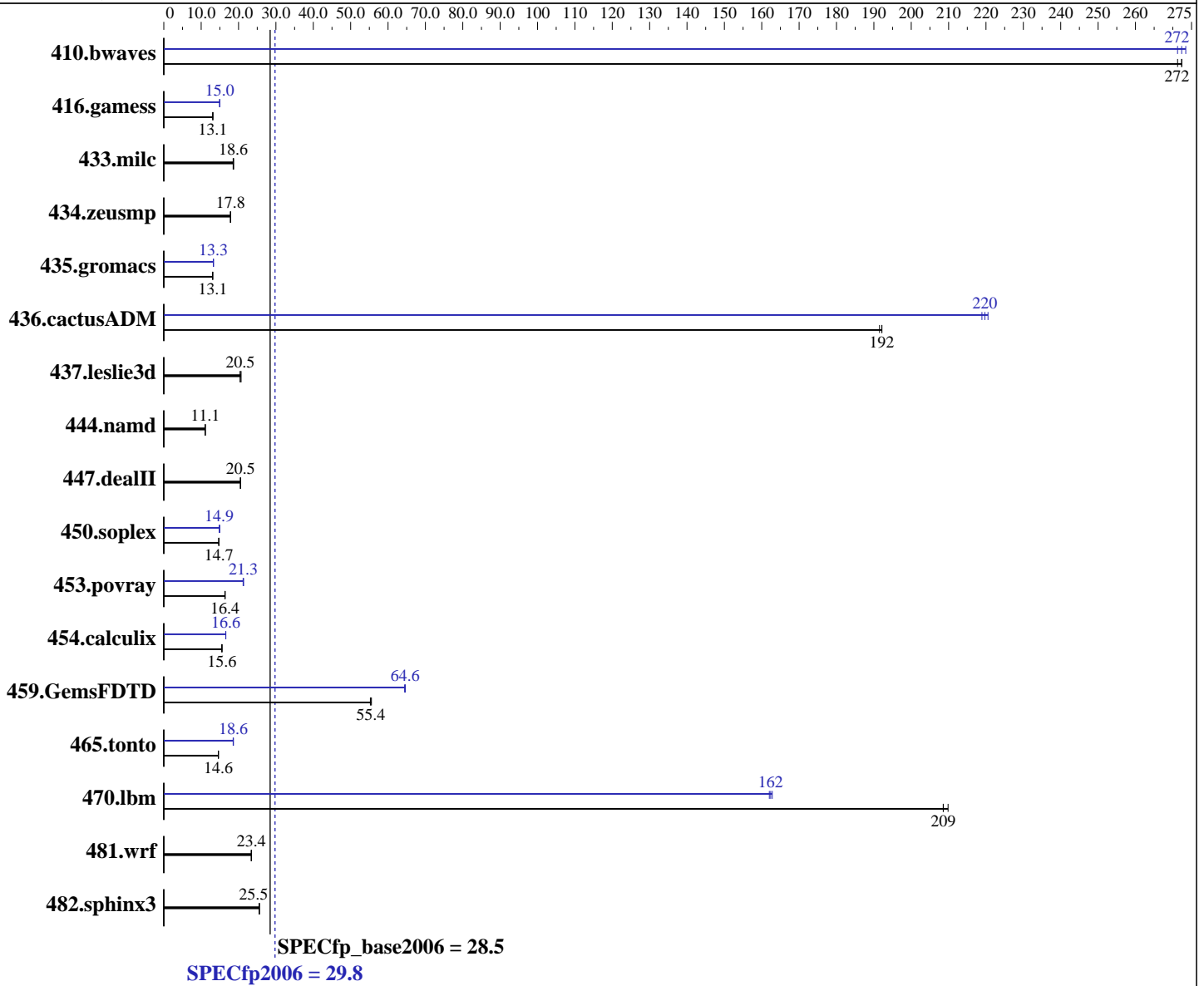
Test date: Jun-2010

Test sponsor: Dell Inc.

Hardware Availability: Mar-2010

Tested by: Dell Inc.

Software Availability: Dec-2009



| Hardware | |
|----------------------|---|
| CPU Name: | Intel Xeon E7520 |
| CPU Characteristics: | None |
| CPU MHz: | 1867 |
| FPU: | Integrated |
| CPU(s) enabled: | 16 cores, 4 chips, 4 cores/chip, 2 threads/core |
| 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 |

| Software | |
|-------------------|---|
| Operating System: | SUSE Linux Enterprise Server 11 (x86_64), kernel-2.6.27.19-5-default |
| Compiler: | Intel C++ and Fortran Professional Compiler for IA32 and Intel 64, Version 11.1 Build 20091130 Package ID: I_cproc_p_11.1.064, I_cprof_p_11.1.064 |
| Auto Parallel: | Yes |
| File System: | ext3 |
| System State: | Run level 3 (multi-user) |

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L3 Cache: 18 MB I+D on chip per chip
 Other Cache: None
 Memory: 256 GB (64 x 4 GB DDR3-1066 QR RDIMM, CL7, ECC, downclocked to 800 MHz)
 Disk Subsystem: 1 x 300 GB 10000 RPM SAS 6Gb
 Other Hardware: None

Base Pointers: 64-bit
 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 | 50.1 | 271 | 49.9 | 272 | 49.9 | 272 | 49.9 | 272 | 49.7 | 273 | 50.1 | 271 |
| 416.gamess | 1488 | 13.2 | 1496 | 13.1 | 1496 | 13.1 | 1308 | 15.0 | 1308 | 15.0 | 1310 | 14.9 |
| 433.milc | 491 | 18.7 | 495 | 18.6 | 494 | 18.6 | 491 | 18.7 | 495 | 18.6 | 494 | 18.6 |
| 434.zeusmp | 508 | 17.9 | 510 | 17.8 | 510 | 17.8 | 508 | 17.9 | 510 | 17.8 | 510 | 17.8 |
| 435.gromacs | 545 | 13.1 | 545 | 13.1 | 547 | 13.1 | 537 | 13.3 | 538 | 13.3 | 539 | 13.2 |
| 436.cactusADM | 62.2 | 192 | 62.4 | 192 | 62.2 | 192 | 54.6 | 219 | 54.4 | 220 | 54.2 | 221 |
| 437.leslie3d | 460 | 20.4 | 459 | 20.5 | 454 | 20.7 | 460 | 20.4 | 459 | 20.5 | 454 | 20.7 |
| 444.namd | 724 | 11.1 | 723 | 11.1 | 723 | 11.1 | 724 | 11.1 | 723 | 11.1 | 723 | 11.1 |
| 447.dealII | 557 | 20.5 | 558 | 20.5 | 558 | 20.5 | 557 | 20.5 | 558 | 20.5 | 558 | 20.5 |
| 450.soplex | 568 | 14.7 | 566 | 14.7 | 564 | 14.8 | 557 | 15.0 | 561 | 14.9 | 561 | 14.9 |
| 453.povray | 324 | 16.4 | 326 | 16.3 | 325 | 16.4 | 250 | 21.3 | 250 | 21.3 | 251 | 21.2 |
| 454.calculix | 532 | 15.5 | 530 | 15.6 | 529 | 15.6 | 497 | 16.6 | 497 | 16.6 | 497 | 16.6 |
| 459.GemsFDTD | 191 | 55.6 | 192 | 55.3 | 192 | 55.4 | 165 | 64.4 | 164 | 64.6 | 164 | 64.6 |
| 465.tonto | 673 | 14.6 | 675 | 14.6 | 673 | 14.6 | 528 | 18.6 | 530 | 18.6 | 529 | 18.6 |
| 470.lbm | 65.5 | 210 | 65.9 | 209 | 65.9 | 209 | 84.6 | 162 | 84.4 | 163 | 84.8 | 162 |
| 481.wrf | 477 | 23.4 | 477 | 23.4 | 477 | 23.4 | 477 | 23.4 | 477 | 23.4 | 477 | 23.4 |
| 482.sphinx3 | 763 | 25.5 | 762 | 25.6 | 763 | 25.5 | 763 | 25.5 | 762 | 25.6 | 763 | 25.5 |

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

Platform Notes

BIOS Settings:

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

Memory Settings: Node Interleaving = Enabled (Default = Disabled)

General Notes

Binaries were compiled on SLES 10 with Binutils 2.18.50.0.7.20080502

The Dell PowerEdge R910 and

the Bull NovaScale R480 F2 models are electronically equivalent.

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General Notes (Continued)

The results have been measured on a Dell PowerEdge R910 model.

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 -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

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Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:

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

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: `-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)
-parallel -ansi-alias -auto-ilp32`

482.sphinx3: `basepeak = yes`

C++ benchmarks:

444.namd: `basepeak = yes`

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) -static(pass 2) -prof-use(pass 2)
-opt-malloc-options=3 -auto-ilp32`

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Peak Optimization Flags (Continued)

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)
-inline-calloc -opt-malloc-options=3 -auto -unroll4

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: 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.20100316.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.20100316.xml>



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