# SPEC® CFP2006 Result

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## Dell Inc.

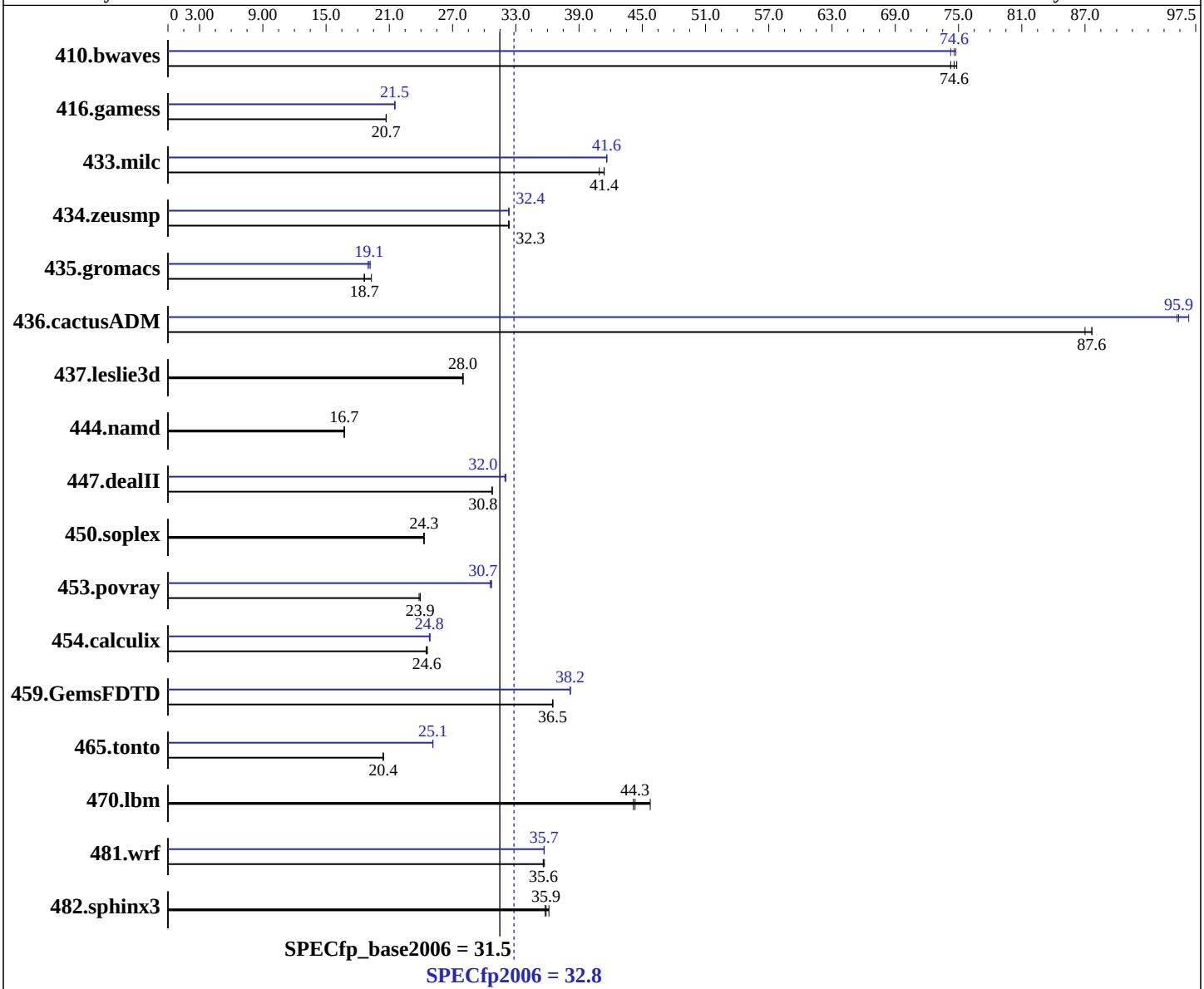
PowerEdge T310 (Intel Xeon X3440, 2.53 GHz)

SPECfp®2006 = 32.8

SPECfp_base2006 = 31.5

**CPU2006 license:** 55
**Test sponsor:** Dell Inc.
**Tested by:** Dell Inc.

**Test date:** Nov-2009
**Hardware Availability:** Sep-2009
**Software Availability:** Jul-2009




## Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon X3440 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 2.93 GHz |
| CPU MHz: | 2533 |
| FPU: | Integrated |
| CPU(s) enabled: | 4 cores, 1 chip, 4 cores/chip, 2 threads/core |
| CPU(s) orderable: | 1 chip |
| 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 Server release 5.3, Kernel 2.6.18-128.el5 |
| Compiler: | Intel Fortran Compiler and Intel C++ Compiler Professional Edition 11.1 For Linux Build 20090511 Package ID: l_cproc_p_11.1.040, l_cprof_p_11.1.040 |
| Auto Parallel: | Yes |
| File System: | ReiserFS |
| System State: | Run level 3 (multi-user) |

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L3 Cache: 8 MB I+D on chip per chip
Other Cache: None
Memory: 8 GB (4 x 2 GB DDR3-1333 DR RDIMM)
Disk Subsystem: 1 x 160 GB 7200 RPM SATA
Other Hardware: None

Base Pointers: 64-bit
Peak Pointers: 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 | 183 | 74.3 | 182 | 74.8 | **182** | **74.6** | 183 | 74.3 | **182** | **74.6** | 182 | 74.8 |
| 416.gamess | **946** | **20.7** | 946 | 20.7 | 945 | 20.7 | 909 | 21.5 | **910** | **21.5** | 910 | 21.5 |
| 433.milc | 222 | 41.4 | 224 | 40.9 | **222** | **41.4** | **221** | **41.6** | 220 | 41.6 | 221 | 41.6 |
| 434.zeusmp | 281 | 32.4 | 282 | 32.3 | **281** | **32.3** | 281 | 32.4 | **281** | **32.4** | 282 | 32.3 |
| 435.gromacs | 370 | 19.3 | **383** | **18.7** | 384 | 18.6 | **374** | **19.1** | 372 | 19.2 | 376 | 19.0 |
| 436.cactusADM | **136** | **87.6** | 137 | 87.0 | 136 | 87.7 | 125 | 95.7 | **125** | **95.9** | 123 | 96.8 |
| 437.leslie3d | **336** | **28.0** | 336 | 28.0 | 336 | 28.0 | **336** | **28.0** | 336 | 28.0 | 336 | 28.0 |
| 444.namd | **480** | **16.7** | 479 | 16.7 | 480 | 16.7 | **480** | **16.7** | 479 | 16.7 | 480 | 16.7 |
| 447.dealII | 372 | 30.8 | **372** | **30.8** | 372 | 30.8 | 358 | 32.0 | 357 | 32.1 | **357** | **32.0** |
| 450.soplex | **343** | **24.3** | 343 | 24.3 | 344 | 24.3 | **343** | **24.3** | 343 | 24.3 | 344 | 24.3 |
| 453.povray | 223 | 23.8 | 222 | 23.9 | **222** | **23.9** | **173** | **30.7** | 174 | 30.6 | 173 | 30.7 |
| 454.calculix | **336** | **24.6** | 335 | 24.6 | 337 | 24.5 | 332 | 24.9 | **333** | **24.8** | 333 | 24.8 |
| 459.GemsFDTD | 291 | 36.5 | 290 | 36.5 | **291** | **36.5** | **278** | **38.2** | 278 | 38.2 | 278 | 38.2 |
| 465.tonto | 482 | 20.4 | 481 | 20.4 | **482** | **20.4** | 392 | 25.1 | **391** | **25.1** | 391 | 25.1 |
| 470.lbm | 300 | 45.8 | **310** | **44.3** | 311 | 44.2 | 300 | 45.8 | **310** | **44.3** | 311 | 44.2 |
| 481.wrf | 313 | 35.7 | **314** | **35.6** | 314 | 35.6 | 313 | 35.7 | **313** | **35.7** | 313 | 35.7 |
| 482.sphinx3 | 545 | 35.8 | **543** | **35.9** | 539 | 36.1 | 545 | 35.8 | **543** | **35.9** | 539 | 36.1 |

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 stacksize to unlimited prior to run
```

## Platform Notes

```
BIOS Settings:
Power Management = Maximum Performance (Default = Active Power Controller)
```

## General Notes

```
OMP_NUM_THREADS set to number of cores
KMP_AFFINITY set to granularity=fine,scatter
The Dell PowerEdge T310 and the Bull NovaScale T820 F2 models are electronically equivalent.
This result was measured on a Dell PowerEdge T310.
```

## 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 -opt-prefetch
```

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

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## Base Optimization Flags (Continued)

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

Benchmarks using both Fortran and C:
`-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -parallel`

## 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: `-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`

470.lbm: `basepeak = yes`

482.sphinx3: `basepeak = yes`

C++ benchmarks:

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`

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## Peak Optimization Flags (Continued)

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) -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: Same as 410.bwaves

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

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic11.1-fp-linux64-revA.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/Intel-ic11.1-fp-linux64-revA.xml

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For other inquiries, please contact webmaster@spec.org.

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