# SPEC® CFP2006 Result

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## Dell Inc.

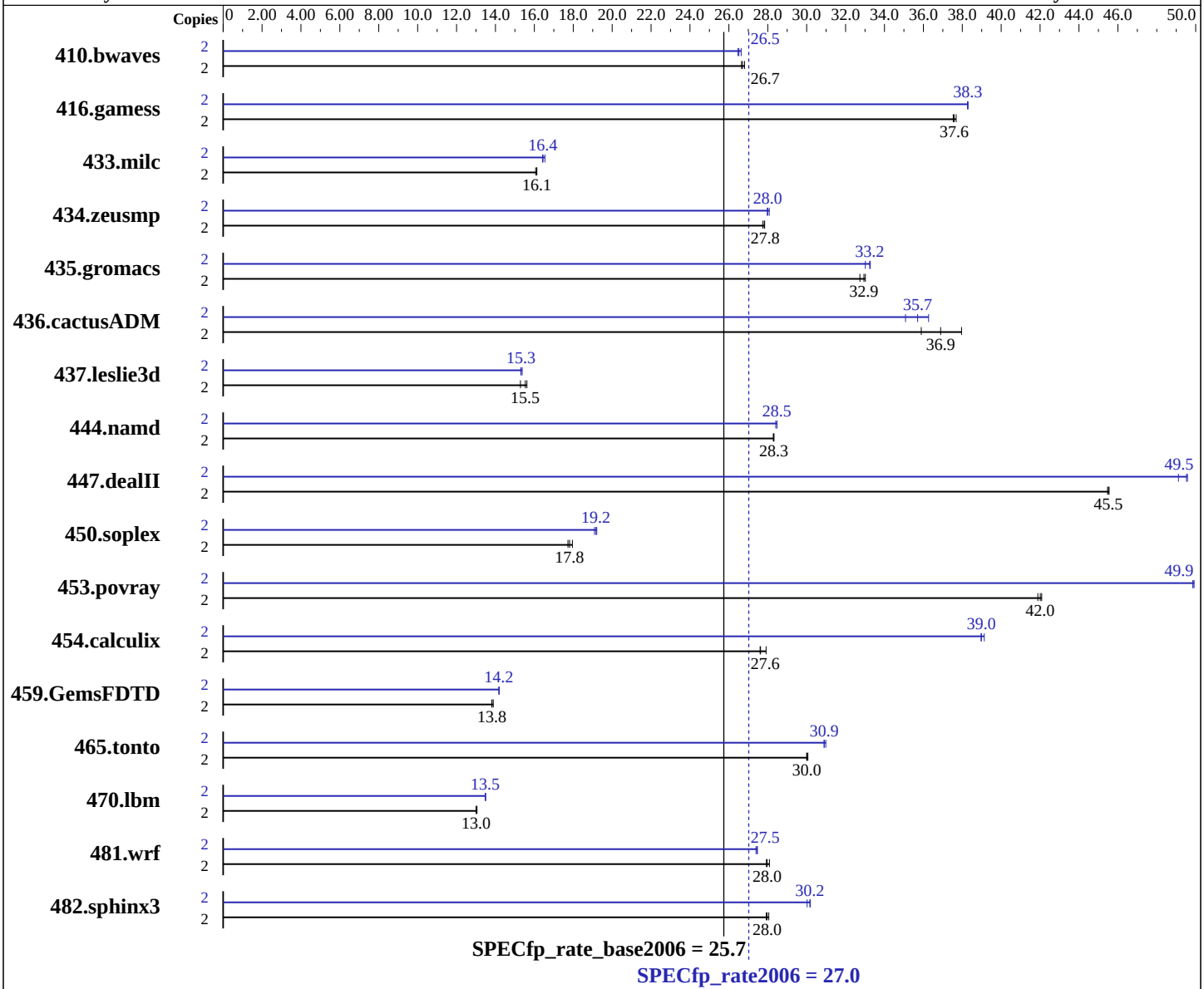
## PowerEdge 860 (Intel Xeon 3070, 2.66 GHz)

**SPECfp®_rate2006 = 27.0**

**SPECfp_rate_base2006 = 25.7**

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

**Test date:** Sep-2007
**Hardware Availability:** Sep-2006
**Software Availability:** Nov-2007




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon 3070 |
| CPU Characteristics: | 1066MHz system bus |
| CPU MHz: | 2660 |
| FPU: | Integrated |
| CPU(s) enabled: | 2 cores, 1 chip, 2 cores/chip |
| CPU(s) orderable: | 1 chip |
| Primary Cache: | 32 KB I + 32 KB D on chip per core |
| Secondary Cache: | 4 MB I+D on chip per chip |

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### Software

| | |
|---|---|
| Operating System: | 64-Bit SUSE LINUX Enterprise Server 10 |
| Compiler: | Intel C++ and Fortran Compiler for Linux32 and Linux64 version 10.1 Build 20070725 |
| Auto Parallel: | No |
| File System: | ReiserFS |
| System State: | Multi-user, run level 3 |
| Base Pointers: | 32/64-bit |
| Peak Pointers: | 32/64-bit |

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L3 Cache: None
Other Cache: None
Memory: 8 GB (4x2 GB 667 Mhz DIMM)
Disk Subsystem: 1 x 73 GB SAS 10k RPM
Other Hardware: None

Other Software: SmartHeap library V8.1

## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 2 | 1020 | 26.7 | 1014 | 26.8 | **1018** | **26.7** | 2 | 1021 | 26.6 | **1025** | **26.5** | 1027 | 26.5 |
| 416.gamess | 2 | 1039 | 37.7 | 1043 | 37.5 | **1042** | **37.6** | 2 | 1023 | 38.3 | **1023** | **38.3** | 1023 | 38.3 |
| 433.milc | 2 | 1143 | 16.1 | **1139** | **16.1** | 1138 | 16.1 | 2 | 1110 | 16.5 | 1118 | 16.4 | **1116** | **16.4** |
| 434.zeusmp | 2 | 656 | 27.7 | **654** | **27.8** | 654 | 27.8 | 2 | **650** | **28.0** | 651 | 28.0 | 648 | 28.1 |
| 435.gromacs | 2 | 436 | 32.7 | 432 | 33.0 | **433** | **32.9** | 2 | 429 | 33.3 | 433 | 33.0 | **430** | **33.2** |
| 436.cactusADM | 2 | 666 | 35.9 | **648** | **36.9** | 630 | 38.0 | 2 | 681 | 35.1 | **669** | **35.7** | 659 | 36.3 |
| 437.leslie3d | 2 | **1210** | **15.5** | 1230 | 15.3 | 1204 | 15.6 | 2 | 1228 | 15.3 | **1227** | **15.3** | 1223 | 15.4 |
| 444.namd | 2 | 567 | 28.3 | **567** | **28.3** | 566 | 28.3 | 2 | 563 | 28.5 | **563** | **28.5** | 565 | 28.4 |
| 447.dealII | 2 | 502 | 45.5 | 503 | 45.5 | **503** | **45.5** | 2 | **462** | **49.5** | 461 | 49.6 | 466 | 49.1 |
| 450.soplex | 2 | 941 | 17.7 | **936** | **17.8** | 929 | 18.0 | 2 | 874 | 19.1 | **870** | **19.2** | 868 | 19.2 |
| 453.povray | 2 | 254 | 41.9 | **253** | **42.0** | 253 | 42.1 | 2 | 213 | 49.9 | **213** | **49.9** | 213 | 49.9 |
| 454.calculix | 2 | 591 | 27.9 | 598 | 27.6 | **597** | **27.6** | 2 | 422 | 39.1 | **423** | **39.0** | 423 | 39.0 |
| 459.GemsFDTD | 2 | 1536 | 13.8 | **1536** | **13.8** | 1528 | 13.9 | 2 | 1494 | 14.2 | 1497 | 14.2 | **1497** | **14.2** |
| 465.tonto | 2 | 655 | 30.1 | 656 | 30.0 | **656** | **30.0** | 2 | 635 | 31.0 | 637 | 30.9 | **637** | **30.9** |
| 470.lbm | 2 | **2112** | **13.0** | 2113 | 13.0 | 2105 | 13.1 | 2 | 2040 | 13.5 | 2036 | 13.5 | **2038** | **13.5** |
| 481.wrf | 2 | **799** | **28.0** | 800 | 27.9 | 795 | 28.1 | 2 | **814** | **27.5** | 813 | 27.5 | 816 | 27.4 |
| 482.sphinx3 | 2 | 1396 | 27.9 | **1394** | **28.0** | 1389 | 28.1 | 2 | 1298 | 30.0 | **1292** | **30.2** | 1291 | 30.2 |

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Compiler Invocation Notes

```
OMP_NUM_THREADS set to number of cores
KMP_STACK_SIZE set to 64M
KMP_AFFINITY set to physical,0
```

## Operating System Notes

```
'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
'/usr/bin/taskset' used to bind processes to CPUs
```

## Platform Notes

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

## 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:
-fast

C++ benchmarks:
-fast

Continued on next page

## Base Optimization Flags (Continued)

Fortran benchmarks:
`-fast`

Benchmarks using both Fortran and C:
`-fast`

## Peak Compiler Invocation

C benchmarks (except as noted below):
`/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/bin/icc`
`-L/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/lib`
`-I/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/include`

433.milc: `icc`

C++ benchmarks (except as noted below):
`icpc`

450.soplex: `/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/bin/icpc`
`-L/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/lib`
`-I/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/include`

Fortran benchmarks (except as noted below):
`ifort`

437.leslie3d: `/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/bin/ifort`
`-L/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/lib`
`-I/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/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`
453.povray: `-DSPEC_CPU_LP64`
454.calculix: `-DSPEC_CPU_LP64 -nofor_main`
459.GemsFDTD: `-DSPEC_CPU_LP64`

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## Peak Portability Flags (Continued)

465.tonto: -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) -fast -fno-alias -auto-ilp32

470.lbm: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -scalar-rep- -prefetch -opt-malloc-options=3

482.sphinx3: -fast -unroll2

C++ benchmarks:

444.namd: -prof-gen(pass 1) -prof-use(pass 2) -fast -fno-alias -auto-ilp32

447.dealII: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -ansi-alias -scalar-rep-

450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -fast -opt-malloc-options=3

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: -fast -prefetch

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0 -ansi-alias -scalar-rep-

434.zeusmp: -prof-gen(pass 1) -prof-use(pass 2) -fast

437.leslie3d: -prof-gen(pass 1) -prof-use(pass 2) -fast -prefetch -opt-malloc-options=3

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0 -prefetch

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4 -auto

Benchmarks using both Fortran and C:

Continued on next page

## Peak Optimization Flags (Continued)

435.gromacs: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-fast -prefetch -auto-ilp32`

436.cactusADM: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-fast -unroll2 -prefetch -auto-ilp32`

454.calculix: `-fast -unroll-aggressive -auto-ilp32`

481.wrf: `-fast -auto-ilp32`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/Intel-ic10.1-FP-intel64-linux-flags.20090714.13.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/Intel-ic10.1-FP-intel64-linux-flags.20090714.13.xml`


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