# SPEC® CFP2006 Result

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## Dell Inc.

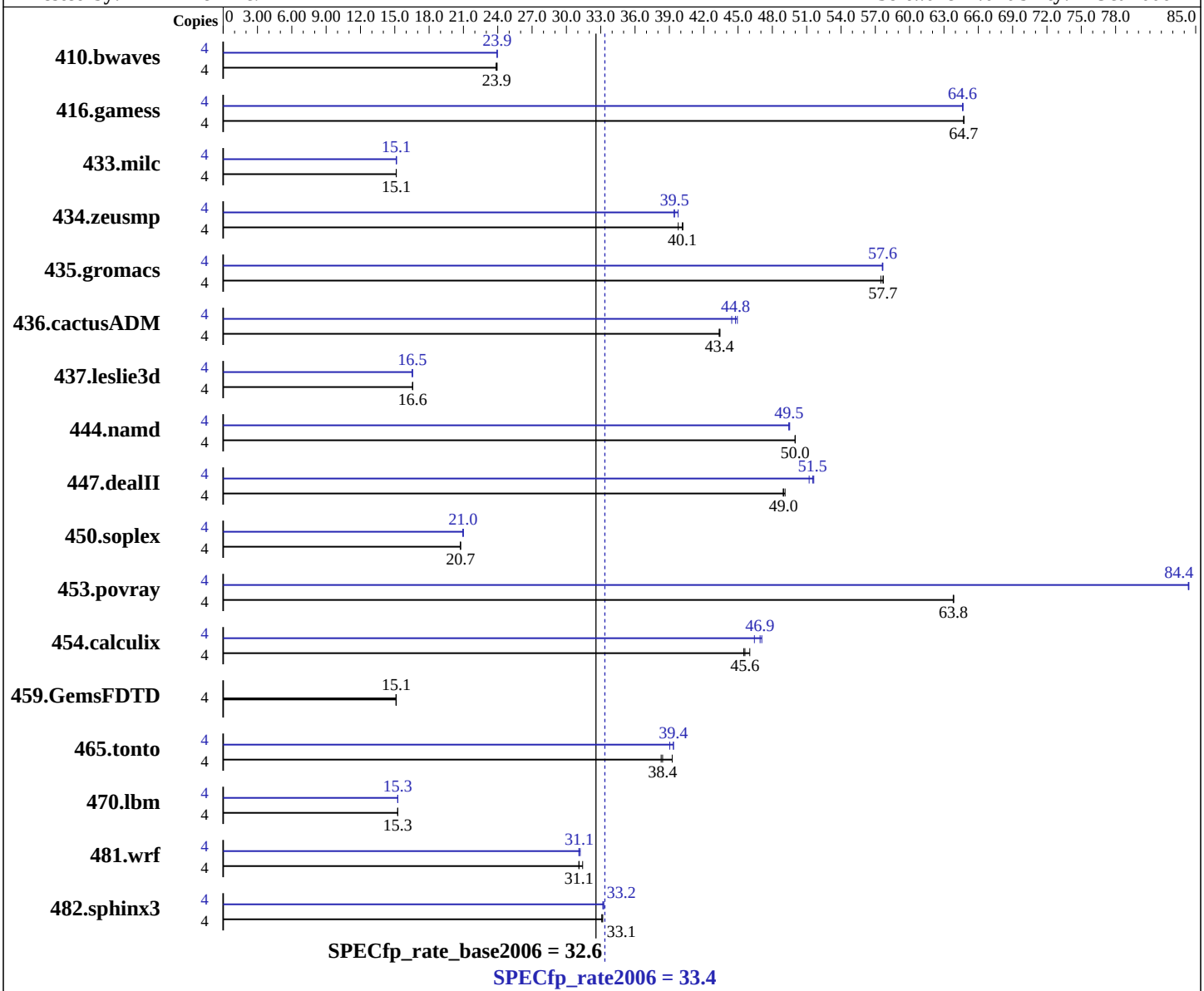
PowerEdge 860 (Intel Xeon X3220, 2.40 GHz)

SPECfp®_rate2006 = 33.4

SPECfp_rate_base2006 = 32.6

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

**Test date:** Jan-2007
**Hardware Availability:** Jan-2007
**Software Availability:** Oct-2006




## Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon X3220 |
| CPU Characteristics: | 1066MHz system bus |
| CPU MHz: | 2400 |
| FPU: | Integrated |
| CPU(s) enabled: | 4 cores, 1 chip, 4 cores/chip |
| CPU(s) orderable: | 1 chip |
| Primary Cache: | 32 KB I + 32 KB D on chip per core |
| Secondary Cache: | 8 MB I+D on chip per chip, 4 MB shared / 2 cores |

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## Software

| | |
|---|---|
| Operating System: | Windows Server 2003 Enterprise x64 Edition |
| Compiler: | Intel C++ Compiler 9.1 for EM64T (20060925Z)<br>Intel FORTRAN Compiler 9.1 for EM64T (20060925Z)<br>Microsoft Visual Studio 2005 (8.0.50727.42)<br>MicroQuill SmartHeap Library 8.0 for x64 |
| Auto Parallel: | No |
| File System: | NTFS |
| System State: | Default |
| Base Pointers: | 64-bit |

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L3 Cache: None
Other Cache: None
Memory: 8 GB (4x2 GB 533MHz ECC DDR2 SDRAM)
Disk Subsystem: 1 x 73GB SAS 10000 RPM
Other Hardware: None

Peak Pointers: 32/64-bit
Other Software: None

## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 4 | 2279 | 23.9 | **2273** | **23.9** | 2270 | 23.9 | 4 | 2269 | 24.0 | 2271 | 23.9 | **2270** | **23.9** |
| 416.gamess | 4 | **1210** | **64.7** | 1210 | 64.7 | 1210 | 64.8 | 4 | **1212** | **64.6** | 1211 | 64.7 | 1212 | 64.6 |
| 433.milc | 4 | 2426 | 15.1 | **2427** | **15.1** | 2428 | 15.1 | 4 | 2427 | 15.1 | 2424 | 15.1 | **2426** | **15.1** |
| 434.zeusmp | 4 | 915 | 39.8 | 906 | 40.2 | **907** | **40.1** | 4 | 924 | 39.4 | 915 | 39.8 | **923** | **39.5** |
| 435.gromacs | 4 | 495 | 57.7 | 497 | 57.5 | **495** | **57.7** | 4 | 496 | 57.6 | **495** | **57.6** | 495 | 57.7 |
| 436.cactusADM | 4 | 1102 | 43.4 | 1101 | 43.4 | **1102** | **43.4** | 4 | 1064 | 44.9 | 1075 | 44.4 | **1067** | **44.8** |
| 437.leslie3d | 4 | 2271 | 16.6 | 2268 | 16.6 | **2271** | **16.6** | 4 | 2277 | 16.5 | **2272** | **16.5** | 2272 | 16.6 |
| 444.namd | 4 | **642** | **50.0** | 642 | 50.0 | 642 | 50.0 | 4 | **649** | **49.5** | 648 | 49.5 | 649 | 49.4 |
| 447.dealII | 4 | **934** | **49.0** | 932 | 49.1 | 935 | 48.9 | 4 | 886 | 51.6 | **888** | **51.5** | 893 | 51.2 |
| 450.soplex | 4 | **1608** | **20.7** | 1609 | 20.7 | 1608 | 20.7 | 4 | 1592 | 21.0 | 1589 | 21.0 | **1591** | **21.0** |
| 453.povray | 4 | 334 | 63.8 | 333 | 63.9 | **333** | **63.8** | 4 | 252 | 84.4 | 252 | 84.4 | **252** | **84.4** |
| 454.calculix | 4 | 717 | 46.0 | **724** | **45.6** | 725 | 45.5 | 4 | **703** | **46.9** | 701 | 47.1 | 711 | 46.4 |
| 459.GemsFDTD | 4 | 2811 | 15.1 | **2805** | **15.1** | 2805 | 15.1 | 4 | 2811 | 15.1 | **2805** | **15.1** | 2805 | 15.1 |
| 465.tonto | 4 | 1003 | 39.2 | 1028 | 38.3 | **1025** | **38.4** | 4 | 1008 | 39.0 | **1000** | **39.4** | 1000 | 39.4 |
| 470.lbm | 4 | **3601** | **15.3** | 3601 | 15.3 | 3603 | 15.3 | 4 | 3602 | 15.3 | **3601** | **15.3** | 3600 | 15.3 |
| 481.wrf | 4 | **1436** | **31.1** | 1422 | 31.4 | 1437 | 31.1 | 4 | 1431 | 31.2 | 1437 | 31.1 | **1436** | **31.1** |
| 482.sphinx3 | 4 | 2356 | 33.1 | 2350 | 33.2 | **2354** | **33.1** | 4 | 2349 | 33.2 | 2344 | 33.3 | **2345** | **33.2** |

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

## General Notes

```
Adjacent Sector Prefetch disabled in BIOS, default enabled
Binaries were built on Windows XP Professional x64 Edition
```

## Base Compiler Invocation

C benchmarks:

```
icl -Qc99
```

C++ benchmarks:

```
icl
```

Continued on next page

## Base Compiler Invocation (Continued)

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
icl -Qc99 ifort

## Base Portability Flags

410.bwaves: -DSPEC_CPU_P64
416.gamess: -DSPEC_CPU_P64
433.milc: -D_Complex= -DSPEC_CPU_P64
434.zeusmp: -DSPEC_CPU_P64
435.gromacs: -D_Complex= -DSPEC_CPU_P64
436.cactusADM: -D_Complex= -DSPEC_CPU_P64 -Qlowercase /assume:underscore
437.leslie3d: -DSPEC_CPU_P64
444.namd: -DSPEC_CPU_P64 /TP
447.dealII: -D_Complex= -DSPEC_CPU_P64 -DBOOST_NO_INTRINSIC_WCHAR_T -DDEAL_II_MEMBER_VAR_SPECIALIZATION_BUG
450.soplex: -DSPEC_CPU_P64
453.povray: -DSPEC_CPU_P64 -DSPEC_CPU_WINDOWS_ICL
454.calculix: -D_Complex= -DSPEC_CPU_P64 -DSPEC_CPU_NOZMODIFIER -Qlowercase
459.GemsFDTD: -DSPEC_CPU_P64
465.tonto: -DSPEC_CPU_P64
470.lbm: -D_Complex= -DSPEC_CPU_P64
481.wrf: -DSPEC_CPU_P64 -DSPEC_CPU_WINDOWS_ICL
482.sphinx3: -D_Complex= -DSPEC_CPU_P64

## Base Optimization Flags

C benchmarks:
-fast /F950000000 shlW64M.lib -link /FORCE:MULTIPLE

C++ benchmarks:
-fast -Qcxx_features /F950000000 shlW64M.lib -link /FORCE:MULTIPLE

Fortran benchmarks:
-fast /F950000000 -link /FORCE:MULTIPLE

Benchmarks using both Fortran and C:
-fast /F950000000 -link /FORCE:MULTIPLE

## Peak Compiler Invocation

C benchmarks:
```
icl -Qc99
```

C++ benchmarks:
```
icl
```

Fortran benchmarks:
```
ifort
```

Benchmarks using both Fortran and C:
```
icl -Qc99 ifort
```

## Peak Portability Flags

```
Same as Base Portability Flags
```

## Peak Optimization Flags

C benchmarks:
```
ONESTEP -Qprof_gen(pass 1) -Qprof_use(pass 2) -fast -Qauto_ilp32
/F950000000 shlW64M.lib            -link /FORCE:MULTIPLE
```

C++ benchmarks:
```
ONESTEP -Qprof_gen(pass 1) -Qprof_use(pass 2) -fast -Qauto_ilp32
-Qcxx_features /F950000000 shlW64M.lib
            -link /FORCE:MULTIPLE
```

Fortran benchmarks:

410.bwaves:
```
ONESTEP -Qprof_gen(pass 1) -Qprof_use(pass 2) -fast
         -Qauto_ilp32 /F950000000            -link /FORCE:MULTIPLE
```

416.gamess:
```
ONESTEP -fast -Qauto_ilp32 /F950000000
                   -link /FORCE:MULTIPLE
```

434.zeusmp:
```
Same as 410.bwaves
```

437.leslie3d:
```
Same as 410.bwaves
```

459.GemsFDTD:
```
basepeak = yes
```

465.tonto:
```
Same as 410.bwaves
```

Benchmarks using both Fortran and C:

Continued on next page

## Peak Optimization Flags (Continued)

435.gromacs: `-fast -Qauto_ilp32 /F950000000 -link /FORCE:MULTIPLE`

436.cactusADM: `-Qprof_gen`(pass 1) `-Qprof_use`(pass 2) `-fast -Qauto_ilp32 /F950000000 -link /FORCE:MULTIPLE`

454.calculix: `Same as 436.cactusADM`

481.wrf: `Same as 435.gromacs`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/dell.cpu2006.ic91.x64.flags.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/dell.cpu2006.ic91.x64.flags.xml`


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

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