# SPEC® CFP2006 Result

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## Hewlett-Packard Company

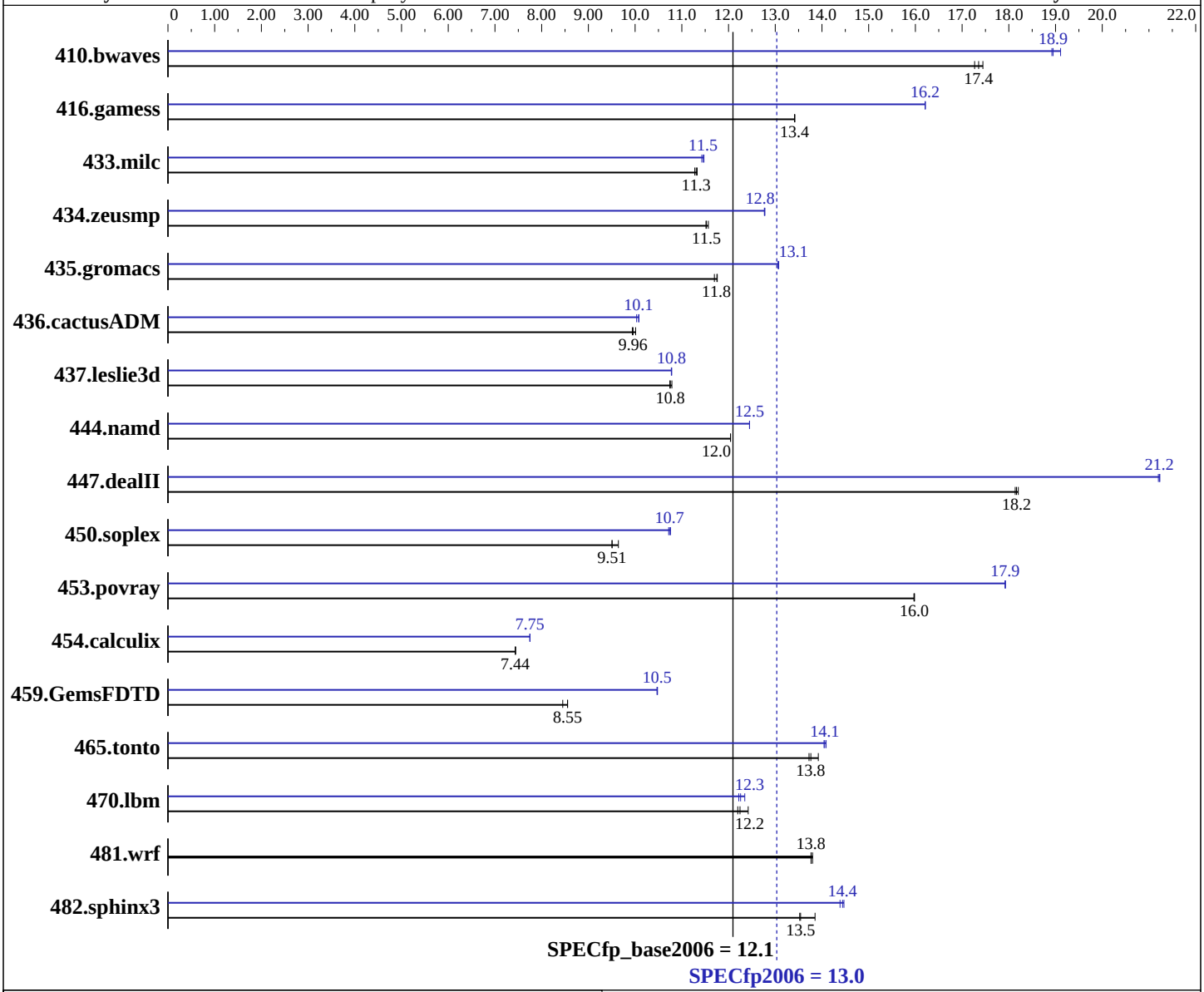
## ProLiant DL585 (AMD Opteron 854)

SPECfp®2006 = 13.0

SPECfp_base2006 = 12.1

**CPU2006 license:** 3
**Test sponsor:** Hewlett-Packard Company
**Tested by:** Hewlett-Packard Company

**Test date:** Apr-2006
**Hardware Availability:** Oct-2005
**Software Availability:** Mar-2006




### Hardware

| | |
|---|---|
| CPU Name: | AMD Opteron 854 |
| CPU Characteristics: | 2.8GHz, 1MB L2 cache |
| CPU MHz: | 2800 |
| FPU: | Integrated |
| CPU(s) enabled: | 2 cores, 2 chips, 1 core/chip |
| CPU(s) orderable: | 2,4 chips |
| Primary Cache: | 64 KB I + 64 KB D on chip per chip |
| Secondary Cache: | 1 MB I+D on chip per chip |

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### Software

| | |
|---|---|
| Operating System: | SuSE Linux Enterprise Server 9 (x86_64) SP 3<br>SuSE kernel 2.6.5-7.244-smp |
| Compiler: | PathScale EKO Compiler Suite, Release 2.4<br>PGI C Compiler 6.1-3 for Linux (64-bit)<br>PGI Fortran Compiler 6.1-3 for Linux (64-bit) |
| Auto Parallel: | No |
| File System: | ext2 |
| System State: | Multi-user run level 3 |
| Base Pointers: | 64-bit |

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L3 Cache: None
Other Cache: None
Memory: 16 GB (8x2048 MB PC3200 CL3.0)
Disk Subsystem: 1x146GB 10K Ultra320 SCSI
Other Hardware: None

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 | 779 | 17.4 | **783** | **17.4** | 787 | 17.3 | 718 | 18.9 | 711 | 19.1 | **717** | **18.9** |
| 416.gamess | 1460 | 13.4 | 1459 | 13.4 | **1459** | **13.4** | 1208 | 16.2 | **1208** | **16.2** | 1208 | 16.2 |
| 433.milc | 814 | 11.3 | 810 | 11.3 | **812** | **11.3** | 803 | 11.4 | 800 | 11.5 | **801** | **11.5** |
| 434.zeusmp | 787 | 11.6 | **789** | **11.5** | 790 | 11.5 | 712 | 12.8 | **712** | **12.8** | 713 | 12.8 |
| 435.gromacs | 610 | 11.7 | **608** | **11.8** | 607 | 11.8 | **546** | **13.1** | 546 | 13.1 | 547 | 13.1 |
| 436.cactusADM | 1194 | 10.0 | **1200** | **9.96** | 1202 | 9.94 | **1186** | **10.1** | 1191 | 10.0 | 1185 | 10.1 |
| 437.leslie3d | 871 | 10.8 | **874** | **10.8** | 875 | 10.7 | **872** | **10.8** | 872 | 10.8 | 872 | 10.8 |
| 444.namd | **666** | **12.0** | 666 | 12.0 | 666 | 12.0 | **644** | **12.5** | 644 | 12.5 | 644 | 12.4 |
| 447.dealII | 628 | 18.2 | **630** | **18.2** | 631 | 18.1 | 540 | 21.2 | **539** | **21.2** | 539 | 21.2 |
| 450.soplex | 865 | 9.64 | 877 | 9.51 | **877** | **9.51** | 775 | 10.8 | 778 | 10.7 | **777** | **10.7** |
| 453.povray | 333 | 16.0 | 333 | 16.0 | **333** | **16.0** | 297 | 17.9 | **297** | **17.9** | 297 | 17.9 |
| 454.calculix | 1109 | 7.44 | 1110 | 7.43 | **1109** | **7.44** | 1064 | 7.75 | **1064** | **7.75** | 1065 | 7.74 |
| 459.GemsFDTD | 1255 | 8.45 | **1241** | **8.55** | 1240 | 8.56 | 1012 | 10.5 | 1013 | 10.5 | **1013** | **10.5** |
| 465.tonto | 707 | 13.9 | **715** | **13.8** | 717 | 13.7 | **700** | **14.1** | 701 | 14.0 | 698 | 14.1 |
| 470.lbm | 1106 | 12.4 | **1122** | **12.2** | 1126 | 12.2 | 1113 | 12.3 | 1124 | 12.2 | **1121** | **12.3** |
| 481.wrf | 809 | 13.8 | 811 | 13.8 | **811** | **13.8** | 809 | 13.8 | 811 | 13.8 | **811** | **13.8** |
| 482.sphinx3 | 1407 | 13.9 | 1441 | 13.5 | **1439** | **13.5** | **1350** | **14.4** | 1355 | 14.4 | 1347 | 14.5 |

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

## General Notes

```
BIOS Configuration Notes
  Node Interleaving is Disabled
Other Configuration Notes
   Taskset utility used to bind process to CPU(s)
```

## Base Compiler Invocation

C benchmarks:
`pathcc`

C++ benchmarks:
`pathCC`

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## Base Compiler Invocation (Continued)

Fortran benchmarks:
pathf95

Benchmarks using both Fortran and C:
pathcc pathf95

## 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
436.cactusADM: -DSPEC_CPU_LP64 -fno-second-underscore
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealII: -DSPEC_CPU_LP64 -DSPEC_CPU_TABLE_WORKAROUND
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX -fno-second-underscore
482.sphinx3: -DSPEC_CPU_LP64

## Base Optimization Flags

C benchmarks:
-Ofast

C++ benchmarks:
-Ofast

Fortran benchmarks:
-Ofast

Benchmarks using both Fortran and C:
-Ofast

## Peak Compiler Invocation

C benchmarks (except as noted below):
pgcc

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# Peak Compiler Invocation (Continued)

470.lbm: pathcc

C++ benchmarks:
pathCC

Fortran benchmarks (except as noted below):
pathf95

434.zeusmp: pgf90

459.GemsFDTD: pgf90

Benchmarks using both Fortran and C (except as noted below):
pathcc pathf95

454.calculix: pgcc pgf90

# 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
436.cactusADM: -DSPEC_CPU_LP64 -fno-second-underscore
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealII: -DSPEC_CPU_LP64 -DSPEC_CPU_TABLE_WORKAROUND
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -Mnomain
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX -fno-second-underscore
482.sphinx3: -DSPEC_CPU_LP64

# Peak Optimization Flags

C benchmarks:

433.milc: -c9x -Mpfi(pass 1) -Mipa=fast(pass 2) -Mipa=inline(pass 2)
-Mipa=nolocalarg(pass 2) -Mipa=vestigial(pass 2)
-Mpfo(pass 2) -tp k8-64 -fastsse

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# Peak Optimization Flags (Continued)

470.lbm: `-fb_create fbdata`(pass 1) `-fb_opt fbdata`(pass 2) `-Ofast`

482.sphinx3: `-c9x -tp k8-64 -fastsse -Mfprelaxed -Mipa=fast -Mipa=inline -Msignextend`

C++ benchmarks:

444.namd: `-fb_create fbdata`(pass 1) `-fb_opt fbdata`(pass 2) `-Ofast`

447.dealII: `-Ofast -m32 -fno-exceptions`

450.soplex: `-m32 -O3 -OPT:IEEE_arith=3 -CG:load_exe=0 -CG:movnti=1 -LNO:minvariant=off -fno-exceptions`

453.povray: `-fb_create fbdata`(pass 1) `-fb_opt fbdata`(pass 2) `-Ofast -fno-fast-math`

Fortran benchmarks:

410.bwaves: `-fb_create fbdata`(pass 1) `-fb_opt fbdata`(pass 2) `-O3 -OPT:Ofast -OPT:IEEE_arith=3 -LNO:blocking=off -LNO:ignore_feedback=off`

416.gamess: `-fb_create fbdata`(pass 1) `-fb_opt fbdata`(pass 2) `-O2 -OPT:Ofast -OPT:ro=3 -OPT:unroll_size=256`

434.zeusmp: `-Mpfi`(pass 1) `-Mipa=fast`(pass 2) `-Mipa=inline`(pass 2) `-Mpfo`(pass 2) `-tp k8-64 -fastsse -Mfprelaxed -Mvect=fuse`

437.leslie3d: `-O3 -OPT:Ofast`

459.GemsFDTD: `-tp k8-64 -fastsse -Munroll=n:4`

465.tonto: `-Ofast -CG:local_fwd_sched=on -IPA:plimit=525`

Benchmarks using both Fortran and C:

435.gromacs: `-O3 -OPT:rsqrt=2 -OPT:ro=3`

436.cactusADM: `-fb_create fbdata`(pass 1) `-fb_opt fbdata`(pass 2) `-O3 -LNO:prefetch_ahead=5 -LNO:ou_prod_max=10 -LNO:full_unroll=5 -ipa`

454.calculix: `-c9x -tp k8-64 -fastsse -Mnolre -Mipa=fast -Mipa=inline`

481.wrf: `basepeak = yes`

# Peak Other Flags

C benchmarks (except as noted below):

`-w`

470.lbm: `No flags used`

Fortran benchmarks:

434.zeusmp: `-w`

459.GemsFDTD: `-w`

Benchmarks using both Fortran and C:

454.calculix: `-w`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/CPU2006_flags.20090715.04.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/CPU2006_flags.20090715.04.xml`


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