# SPEC® CFP2006 Result

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## Hewlett-Packard Company

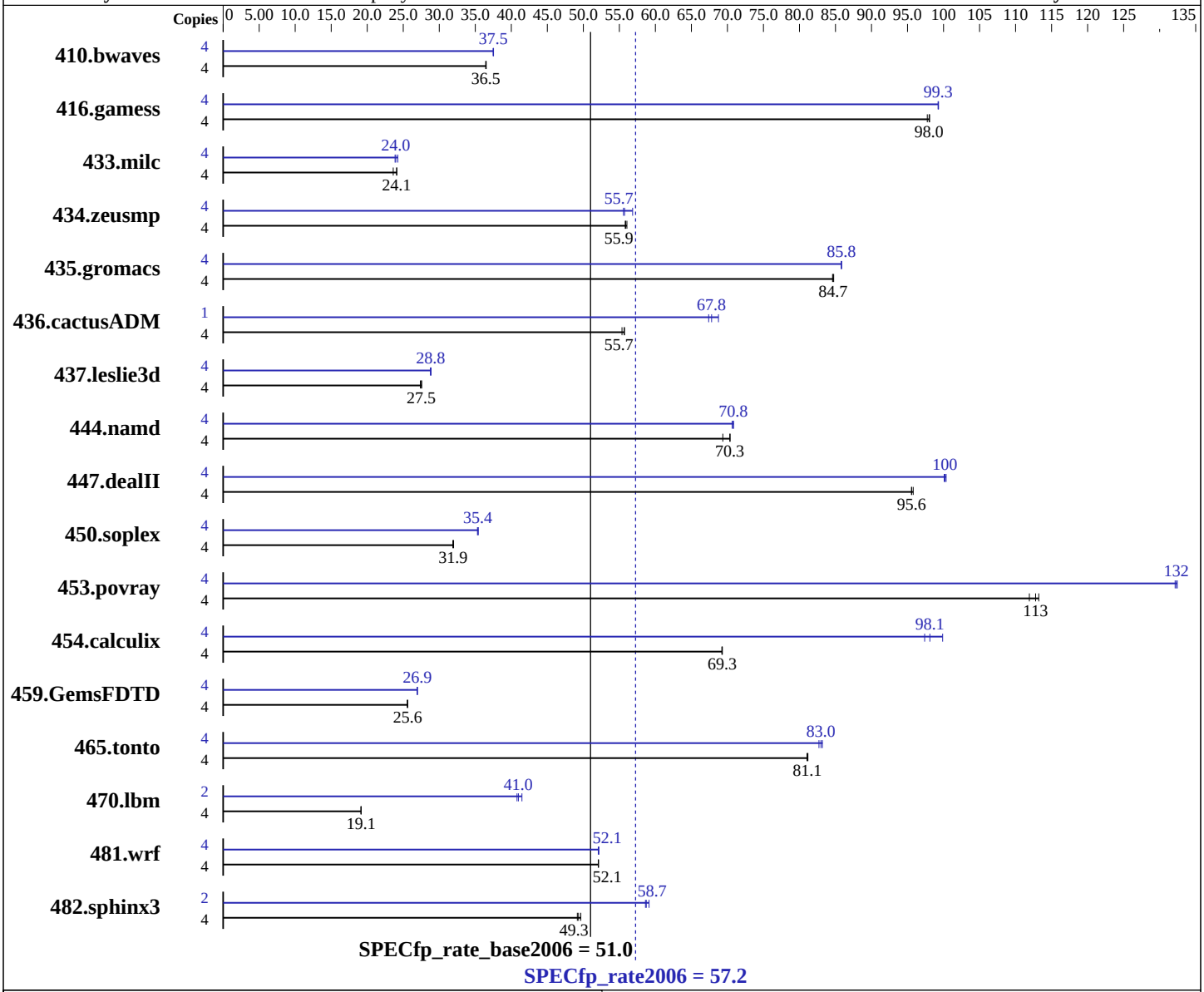
ProLiant DL360 G5
(3.33 GHz, Intel Xeon processor X5260)

**SPECfp®_rate2006 = 57.2**

**SPECfp_rate_base2006 = 51.0**

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

**Test date:** Dec-2007
**Hardware Availability:** Jan-2008
**Software Availability:** Nov-2007




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon X5260 |
| CPU Characteristics: | 3.33 GHz, 6 MB L2 shared, 1333 MHz system bus |
| CPU MHz: | 3333 |
| FPU: | Integrated |
| CPU(s) enabled: | 4 cores, 2 chips, 2 cores/chip |
| CPU(s) orderable: | 1,2 chips |
| Primary Cache: | 32 KB I + 32 KB D on chip per core |
| Secondary Cache: | 6 MB I+D on chip per chip |

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### Software

| | |
|---|---|
| Operating System: | SUSE Linux Enterprise Server 10 (x86_64) SP1<br>Kernel 2.6.16.46-0.12-smp |
| Compiler: | Intel C++ Compiler for applications running on IA-32 and Intel 64, Version 10.1<br>Build 20070913 Package ID: l_cc_p_10.1.008<br>Intel Fortran Compiler for applications running on IA-32 and Intel 64, Version 10.1<br>Build 20070913 Package ID: l_cc_p_10.1.008 |
| Auto Parallel: | Yes |
| File System: | ext2 |

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| | |
|---|---|
| L3 Cache: | None |
| Other Cache: | None |
| Memory: | 16 GB (8x2 GB PC2-5300F CL5) |
| Disk Subsystem: | 1x72 GB 15 K SAS |
| Other Hardware: | None |

| | |
|---|---|
| System State: | Multi-user run level 3 |
| Base Pointers: | 64-bit |
| Peak Pointers: | 32/64-bit |
| Other Software: | binutils-2.17.50 |

## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 4 | **1490** | **36.5** | 1489 | 36.5 | 1491 | 36.4 | 4 | 1451 | 37.5 | **1449** | **37.5** | 1448 | 37.5 |
| 416.gamess | 4 | 801 | 97.7 | 799 | 98.1 | **799** | **98.0** | 4 | **789** | **99.3** | 789 | 99.3 | 789 | 99.3 |
| 433.milc | 4 | **1526** | **24.1** | 1523 | 24.1 | 1555 | 23.6 | 4 | 1539 | 23.9 | 1514 | 24.3 | **1532** | **24.0** |
| 434.zeusmp | 4 | **651** | **55.9** | 652 | 55.8 | 649 | 56.0 | 4 | 655 | 55.6 | 640 | 56.8 | **653** | **55.7** |
| 435.gromacs | 4 | **337** | **84.7** | 337 | 84.8 | 338 | 84.6 | 4 | **333** | **85.8** | 333 | 85.8 | 333 | 85.9 |
| 436.cactusADM | 4 | 858 | 55.7 | 863 | 55.4 | **859** | **55.7** | 1 | 177 | 67.4 | **176** | **67.8** | 174 | 68.8 |
| 437.leslie3d | 4 | 1365 | 27.6 | 1374 | 27.4 | **1366** | **27.5** | 4 | 1307 | 28.8 | 1302 | 28.9 | **1306** | **28.8** |
| 444.namd | 4 | 456 | 70.4 | **456** | **70.3** | 463 | 69.4 | 4 | 453 | 70.8 | 454 | 70.7 | **453** | **70.8** |
| 447.dealII | 4 | 479 | 95.6 | **479** | **95.6** | 478 | 95.8 | 4 | 457 | 100 | **457** | **100** | 456 | 100 |
| 450.soplex | 4 | 1046 | 31.9 | **1045** | **31.9** | 1043 | 32.0 | 4 | **943** | **35.4** | 945 | 35.3 | 942 | 35.4 |
| 453.povray | 4 | **189** | **113** | 188 | 113 | 190 | 112 | 4 | **161** | **132** | 161 | 132 | 161 | 132 |
| 454.calculix | 4 | **476** | **69.3** | 477 | 69.2 | 476 | 69.3 | 4 | **336** | **98.1** | 339 | 97.4 | 330 | 99.9 |
| 459.GemsFDTD | 4 | 1660 | 25.6 | 1657 | 25.6 | **1657** | **25.6** | 4 | 1575 | 26.9 | 1574 | 27.0 | **1575** | **26.9** |
| 465.tonto | 4 | 486 | 81.0 | 485 | 81.2 | **485** | **81.1** | 4 | **474** | **83.0** | 473 | 83.2 | 476 | 82.7 |
| 470.lbm | 4 | 2871 | 19.1 | **2871** | **19.1** | 2870 | 19.2 | 2 | 674 | 40.8 | 663 | 41.5 | **670** | **41.0** |
| 481.wrf | 4 | 858 | 52.1 | 858 | 52.1 | **858** | **52.1** | 4 | 857 | 52.1 | 858 | 52.1 | **857** | **52.1** |
| 482.sphinx3 | 4 | 1570 | 49.7 | 1586 | 49.2 | **1580** | **49.3** | 2 | 659 | 59.1 | 665 | 58.6 | **664** | **58.7** |

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
'/usr/bin/taskset' used to bind processes to CPUs
OMP_NUM_THREADS set to number of cores
KMP_AFFINITY set to physical,0
KMP_STACKSIZE set to 64M
```

## Platform Notes

```
BIOS configuration:
  Power Regulator set to Static High Performance Mode
```

## 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

Fortran benchmarks:
-fast

Benchmarks using both Fortran and C:
-fast

## Peak Compiler Invocation

C benchmarks (except as noted below):
`/opt/intel/cc/10.1.008/bin/icc -L/opt/intel/cc/10.1.008/lib -I/opt/intel/cc/10.1.008/include`

433.milc: `icc`

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

450.soplex: `/opt/intel/cc/10.1.008/bin/icpc -L/opt/intel/cc/10.1.008/lib -I/opt/intel/cc/10.1.008/include`

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

437.leslie3d: `/opt/intel/fc/10.1.008/bin/ifort -L/opt/intel/fc/10.1.008/lib -I/opt/intel/fc/10.1.008/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`
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`

Continued on next page

# Peak Optimization Flags (Continued)

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:

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 -parallel -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/HP-Intel-ic10.1-linux-fp-flags.html

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


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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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