# SPEC® CFP2006 Result

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## Hewlett-Packard Company

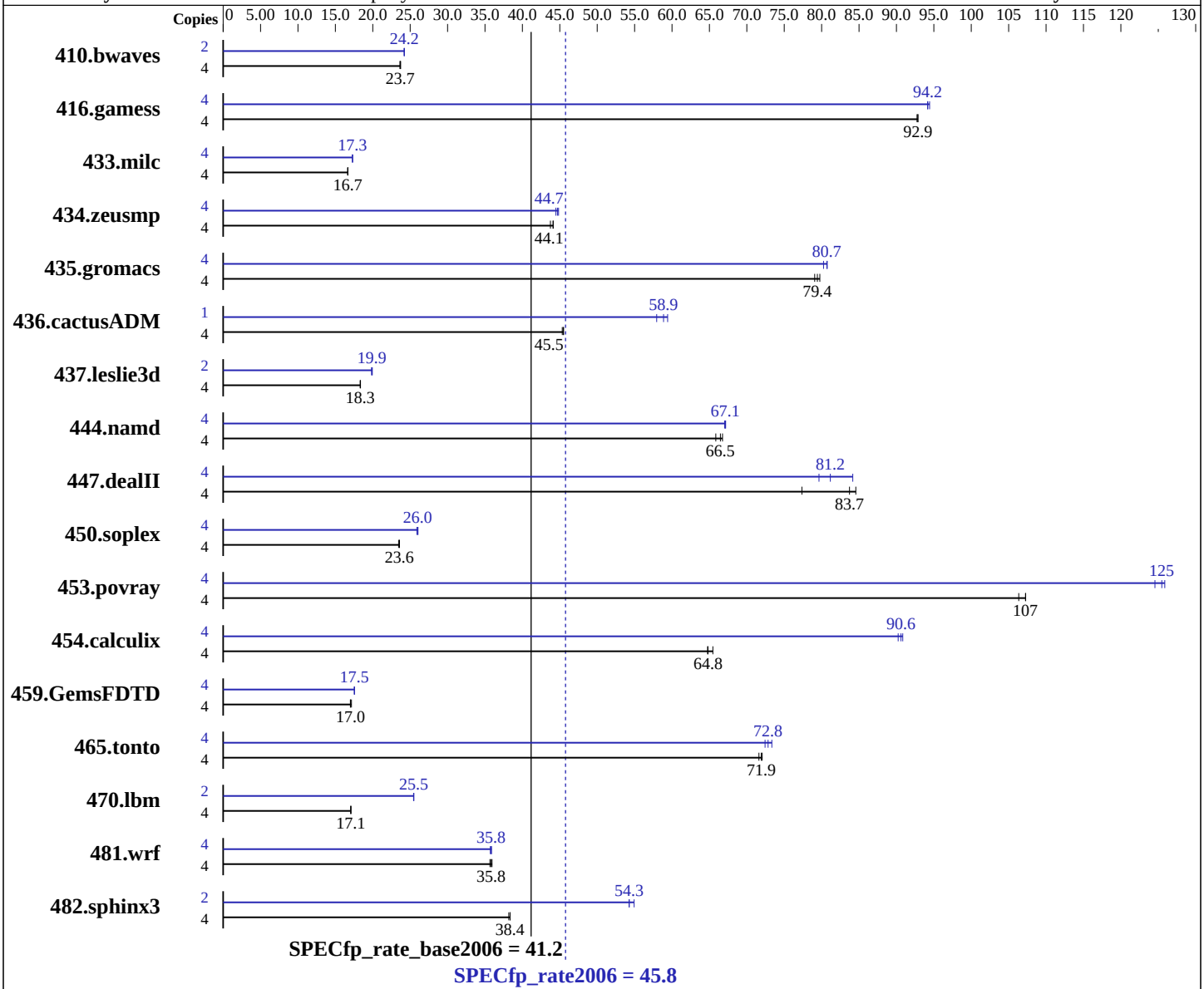
ProLiant DL380 G5
(3.16 GHz, Intel Xeon X5460)

SPECfp®_rate2006 = 45.8

SPECfp_rate_base2006 = 41.2

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

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




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon X5460 |
| CPU Characteristics: | 3.16 GHz, 2x6 MB L2 shared, 1333 MHz system bus |
| CPU MHz: | 3166 |
| FPU: | Integrated |
| CPU(s) enabled: | 4 cores, 1 chip, 4 cores/chip |
| CPU(s) orderable: | 1,2 chips |
| Primary Cache: | 32 KB I + 32 KB D on chip per core |
| Secondary Cache: | 12 MB I+D on chip per chip, 6 MB shared / 2 cores |

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### Software

| | |
|---|---|
| Operating System: | SUSE Linux Enterprise Server 10 (x86_64) SP1, Kernel 2.6.16.46-0.12-smp |
| Compiler: | Intel C++ Compiler for applications running on IA-32 and Intel 64, Version 10.1 Build 20070913 Package ID: l_cc_p_10.1.008 Intel Fortran Compiler for applications running on IA-32 and Intel 64, Version 10.1 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 | 2291 | 23.7 | 2300 | 23.6 | **2297** | **23.7** | 2 | **1123** | **24.2** | 1123 | 24.2 | 1122 | 24.2 |
| 416.gamess | 4 | **843** | **92.9** | 844 | 92.7 | 843 | 92.9 | 4 | **832** | **94.2** | 832 | 94.2 | 829 | 94.4 |
| 433.milc | 4 | 2208 | 16.6 | 2201 | 16.7 | **2201** | **16.7** | 4 | 2123 | 17.3 | **2124** | **17.3** | 2125 | 17.3 |
| 434.zeusmp | 4 | **825** | **44.1** | 832 | 43.7 | 825 | 44.1 | 4 | 818 | 44.5 | 812 | 44.8 | **815** | **44.7** |
| 435.gromacs | 4 | 358 | 79.8 | 361 | 79.1 | **360** | **79.4** | 4 | 356 | 80.3 | **354** | **80.7** | 354 | 80.8 |
| 436.cactusADM | 4 | 1055 | 45.3 | **1051** | **45.5** | 1050 | 45.5 | 1 | **203** | **58.9** | 201 | 59.4 | 206 | 58.0 |
| 437.leslie3d | 4 | 2052 | 18.3 | 2048 | 18.4 | **2051** | **18.3** | 2 | 948 | 19.8 | 943 | 19.9 | **946** | **19.9** |
| 444.namd | 4 | 481 | 66.8 | 487 | 65.9 | **483** | **66.5** | 4 | 479 | 67.0 | **478** | **67.1** | 478 | 67.2 |
| 447.dealII | 4 | 591 | 77.4 | 541 | 84.6 | **547** | **83.7** | 4 | 544 | 84.2 | 575 | 79.6 | **564** | **81.2** |
| 450.soplex | 4 | 1422 | 23.5 | 1415 | 23.6 | **1417** | **23.6** | 4 | 1288 | 25.9 | 1281 | 26.0 | **1283** | **26.0** |
| 453.povray | 4 | 198 | 107 | **198** | **107** | 200 | 106 | 4 | 169 | 126 | **170** | **125** | 171 | 125 |
| 454.calculix | 4 | 510 | 64.8 | 504 | 65.5 | **509** | **64.8** | 4 | 366 | 90.2 | **364** | **90.6** | 363 | 90.8 |
| 459.GemsFDTD | 4 | **2492** | **17.0** | 2496 | 17.0 | 2474 | 17.2 | 4 | **2419** | **17.5** | 2418 | 17.6 | 2419 | 17.5 |
| 465.tonto | 4 | 546 | 72.1 | **547** | **71.9** | 550 | 71.6 | 4 | 537 | 73.3 | **540** | **72.8** | 543 | 72.4 |
| 470.lbm | 4 | 3221 | 17.1 | **3220** | **17.1** | 3220 | 17.1 | 2 | 1080 | 25.5 | **1079** | **25.5** | 1078 | 25.5 |
| 481.wrf | 4 | 1243 | 35.9 | **1248** | **35.8** | 1253 | 35.7 | 4 | 1251 | 35.7 | **1247** | **35.8** | 1246 | 35.9 |
| 482.sphinx3 | 4 | 2032 | 38.4 | **2033** | **38.4** | 2042 | 38.2 | 2 | 718 | 54.3 | 710 | 54.9 | **718** | **54.3** |

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
  Adjacent Sector Prefetch Disabled
  Hardware Prefetcher Disabled
```

## 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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