# SPEC® CFP2006 Result

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## Hewlett-Packard Company

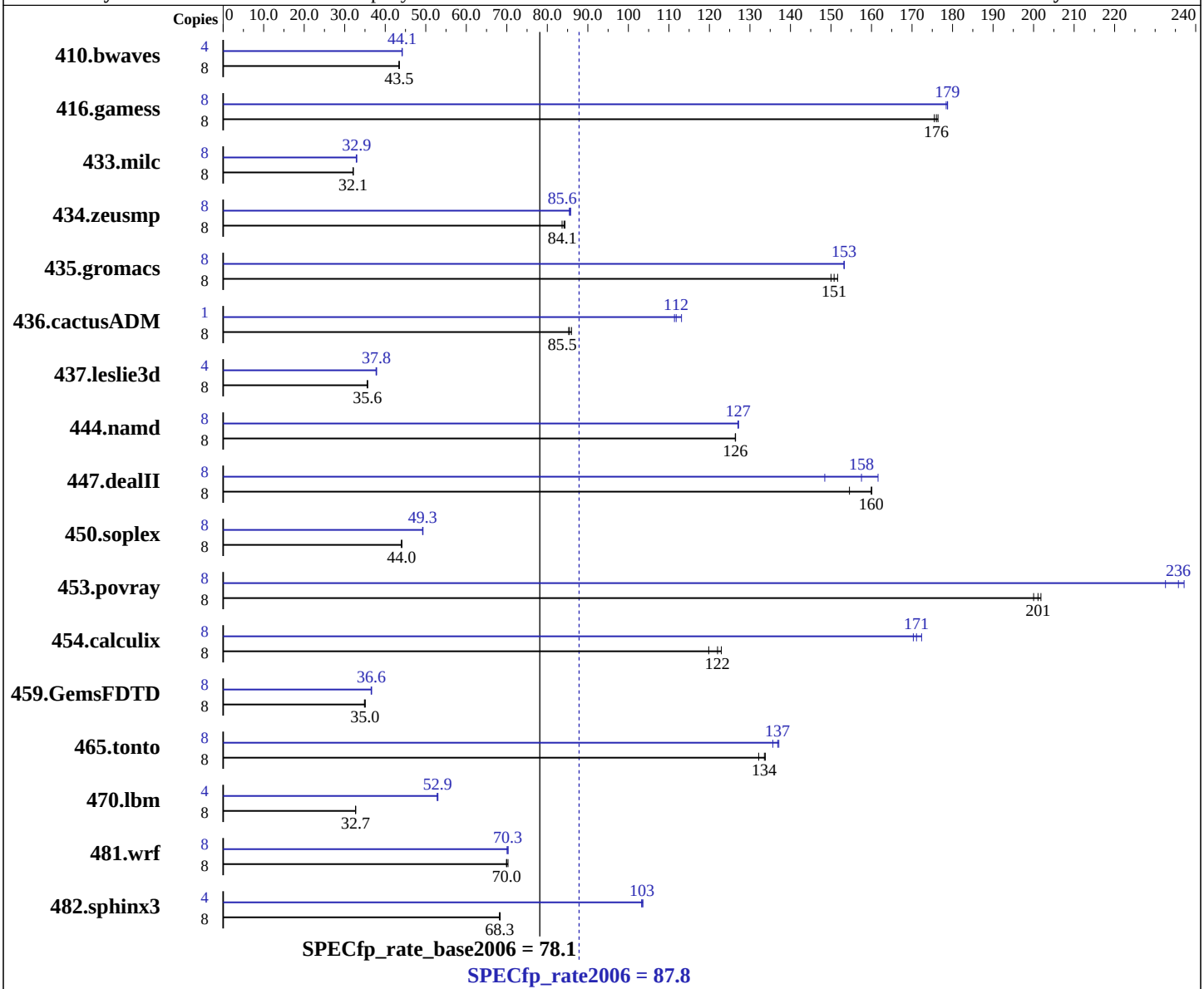
ProLiant DL160 G5
(3.0 GHz, Intel Xeon E5472)

SPECfp®_rate2006 = 87.8

SPECfp_rate_base2006 = 78.1

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

**Test date:** Jun-2008
**Hardware Availability:** May-2008
**Software Availability:** Nov-2007




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E5472 |
| CPU Characteristics: | 3.0 GHz, 2x6 MB L2 shared, 1600 MHz system bus |
| CPU MHz: | 3000 |
| FPU: | Integrated |
| CPU(s) enabled: | 8 cores, 2 chips, 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 10.1 for Linux Build 20070913 Package ID: l_cc_p_10.1.008 Intel Fortran Compiler 10.1 for Linux Build 20070913 Package ID: l_cc_p_10.1.008 |
| Auto Parallel: | Yes |
| File System: | ext2 |
| System State: | Run level 3 (multi-user) |

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L3 Cache: None
Other Cache: None
Memory: 32 GB (8x4 GB PC2-6400F CL6)
Disk Subsystem: 1x160 GB 7.2 K SATA
Other Hardware: None

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 | 8 | 2505 | 43.4 | 2502 | 43.5 | **2502** | **43.5** | 4 | **1231** | **44.1** | 1232 | 44.1 | 1229 | 44.2 |
| 416.gamess | 8 | 893 | 175 | 888 | 176 | **890** | **176** | 8 | **876** | **179** | 878 | 178 | 876 | 179 |
| 433.milc | 8 | 2286 | 32.1 | **2290** | **32.1** | 2290 | 32.1 | 8 | **2230** | **32.9** | 2236 | 32.8 | 2229 | 33.0 |
| 434.zeusmp | 8 | **865** | **84.1** | 863 | 84.3 | 870 | 83.6 | 8 | **850** | **85.6** | 849 | 85.8 | 852 | 85.4 |
| 435.gromacs | 8 | 377 | 152 | **379** | **151** | 381 | 150 | 8 | **373** | **153** | 373 | 153 | 373 | 153 |
| 436.cactusADM | 8 | 1121 | 85.3 | **1119** | **85.5** | 1112 | 86.0 | 1 | 106 | 113 | **107** | **112** | 107 | 111 |
| 437.leslie3d | 8 | 2116 | 35.5 | **2110** | **35.6** | 2109 | 35.7 | 4 | **995** | **37.8** | 993 | 37.9 | 996 | 37.7 |
| 444.namd | 8 | **508** | **126** | 508 | 126 | 507 | 126 | 8 | 505 | 127 | 504 | 127 | **505** | **127** |
| 447.dealII | 8 | 572 | 160 | **572** | **160** | 592 | 155 | 8 | 566 | 162 | 616 | 148 | **581** | **158** |
| 450.soplex | 8 | 1513 | 44.1 | **1515** | **44.0** | 1517 | 44.0 | 8 | 1353 | 49.3 | **1355** | **49.3** | 1355 | 49.2 |
| 453.povray | 8 | 213 | 200 | **212** | **201** | 211 | 202 | 8 | 179 | 237 | 183 | 233 | **181** | **236** |
| 454.calculix | 8 | 537 | 123 | 551 | 120 | **541** | **122** | 8 | **386** | **171** | 383 | 172 | 388 | 170 |
| 459.GemsFDTD | 8 | 2420 | 35.1 | 2435 | 34.9 | **2426** | **35.0** | 8 | 2318 | 36.6 | **2320** | **36.6** | 2324 | 36.5 |
| 465.tonto | 8 | 596 | 132 | **589** | **134** | 588 | 134 | 8 | 580 | 136 | 574 | 137 | **575** | **137** |
| 470.lbm | 8 | **3363** | **32.7** | 3362 | 32.7 | 3364 | 32.7 | 4 | 1040 | 52.8 | 1037 | 53.0 | **1039** | **52.9** |
| 481.wrf | 8 | 1278 | 69.9 | **1277** | **70.0** | 1271 | 70.3 | 8 | 1271 | 70.3 | 1275 | 70.1 | **1272** | **70.3** |
| 482.sphinx3 | 8 | 2288 | 68.2 | 2281 | 68.4 | **2284** | **68.3** | 4 | **754** | **103** | 755 | 103 | 753 | 104 |

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

## Submit Notes

```
The config file option 'submit' was used.
 '/usr/bin/taskset' used to bind processes to CPUs
```

## Operating System Notes

```
'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
 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

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# Base Optimization Flags (Continued)

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

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

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# Peak Optimization Flags (Continued)

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.20090713.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.20090713.xml`


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

Tested with SPEC CPU2006 v1.1.
Report generated on Tue Jul 22 20:02:41 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 22 July 2008.