# SPEC® CFP2006 Result

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## Hewlett-Packard Company

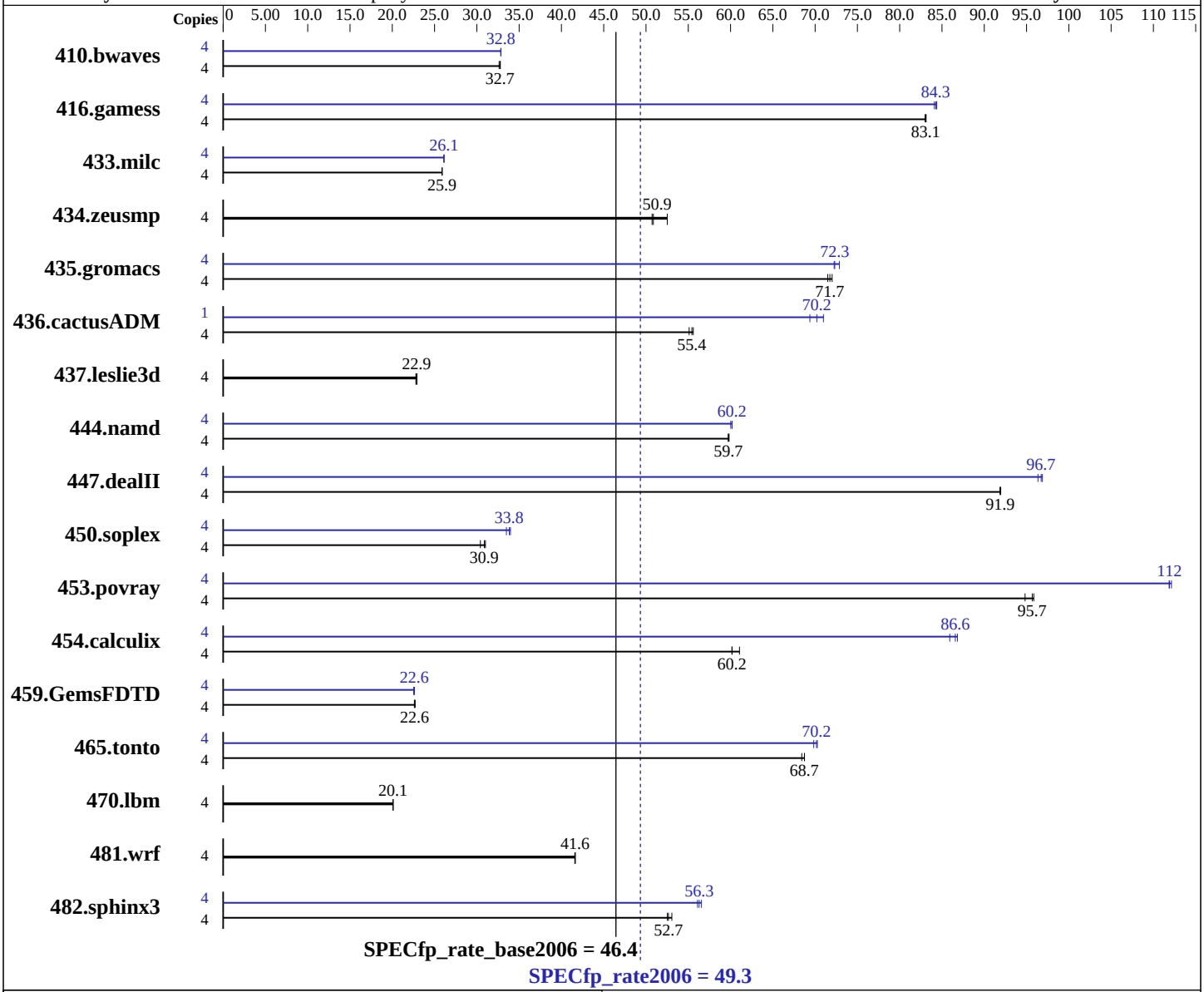
ProLiant DL120 G5
(2.83 GHz, Intel Xeon X3360)

SPECfp®_rate2006 = 49.3

SPECfp_rate_base2006 = 46.4

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

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




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon X3360 |
| CPU Characteristics: | 2.83 GHz, 2x6 MB L2 shared, 1333 MHz system bus |
| CPU MHz: | 2833 |
| 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: | 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: 8 GB (4x2 GB PC2-6400E 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 | 4 | **1660** | **32.7** | 1658 | 32.8 | 1666 | 32.6 | 4 | 1655 | 32.9 | 1656 | 32.8 | **1655** | **32.8** |
| 416.gamess | 4 | **943** | **83.1** | 942 | 83.1 | 944 | 83.0 | 4 | 931 | 84.1 | 928 | 84.4 | **929** | **84.3** |
| 433.milc | 4 | **1419** | **25.9** | 1418 | 25.9 | 1419 | 25.9 | 4 | 1406 | 26.1 | **1406** | **26.1** | 1407 | 26.1 |
| 434.zeusmp | 4 | **716** | **50.9** | 693 | 52.5 | 718 | 50.7 | 4 | **716** | **50.9** | 693 | 52.5 | 718 | 50.7 |
| 435.gromacs | 4 | 399 | 71.5 | **398** | **71.7** | 397 | 72.0 | 4 | 395 | 72.2 | 392 | 72.9 | **395** | **72.3** |
| 436.cactusADM | 4 | 860 | 55.6 | **862** | **55.4** | 867 | 55.1 | 1 | 172 | 69.4 | 168 | 71.0 | **170** | **70.2** |
| 437.leslie3d | 4 | 1650 | 22.8 | 1642 | 22.9 | **1644** | **22.9** | 4 | 1650 | 22.8 | 1642 | 22.9 | **1644** | **22.9** |
| 444.namd | 4 | **537** | **59.7** | 537 | 59.7 | 536 | 59.8 | 4 | 535 | 60.0 | **533** | **60.2** | 533 | 60.2 |
| 447.dealII | 4 | **498** | **91.9** | 498 | 91.9 | 498 | 91.9 | 4 | 472 | 96.9 | **473** | **96.7** | 475 | 96.4 |
| 450.soplex | 4 | 1097 | 30.4 | 1076 | 31.0 | **1080** | **30.9** | 4 | 996 | 33.5 | **986** | **33.8** | 982 | 34.0 |
| 453.povray | 4 | 224 | 94.8 | 222 | 95.9 | **222** | **95.7** | 4 | **190** | **112** | 190 | 112 | 190 | 112 |
| 454.calculix | 4 | **548** | **60.2** | 549 | 60.2 | 540 | 61.1 | 4 | **381** | **86.6** | 384 | 85.9 | 380 | 86.8 |
| 459.GemsFDTD | 4 | 1869 | 22.7 | 1877 | 22.6 | **1874** | **22.6** | 4 | 1885 | 22.5 | **1877** | **22.6** | 1877 | 22.6 |
| 465.tonto | 4 | 573 | 68.7 | **573** | **68.7** | 575 | 68.4 | 4 | 564 | 69.8 | **561** | **70.2** | 560 | 70.3 |
| 470.lbm | 4 | 2736 | 20.1 | 2735 | 20.1 | **2736** | **20.1** | 4 | 2736 | 20.1 | 2735 | 20.1 | **2736** | **20.1** |
| 481.wrf | 4 | **1074** | **41.6** | 1074 | 41.6 | 1073 | 41.6 | 4 | **1074** | **41.6** | 1074 | 41.6 | 1073 | 41.6 |
| 482.sphinx3 | 4 | 1469 | 53.1 | 1484 | 52.5 | **1481** | **52.7** | 4 | **1385** | **56.3** | 1378 | 56.6 | 1390 | 56.1 |

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, except for 436.cactusADM at peak
 OMP_NUM_THREADS set to number of cores
 KMP_AFFINITY set to physical,0
 KMP_STACKSIZE set to 64M
```

## Platform Notes

```
BIOS configuration:
  Hardware Prefetcher Disabled
  Adjacent Cache Line Prefetch 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):
icc

482.sphinx3: /opt/intel/cc/10.1.008/bin/icc -L/opt/intel/cc/10.1.008/lib -I/opt/intel/cc/10.1.008/include

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:
ifort

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
437.leslie3d: -DSPEC_CPU_LP64
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
470.lbm: -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: basepeak = yes

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: `basepeak = yes`

437.leslie3d: `basepeak = yes`

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: `basepeak = yes`

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 other inquiries, please contact webmaster@spec.org.

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