# SPEC® CFP2006 Result

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## Hewlett-Packard Company

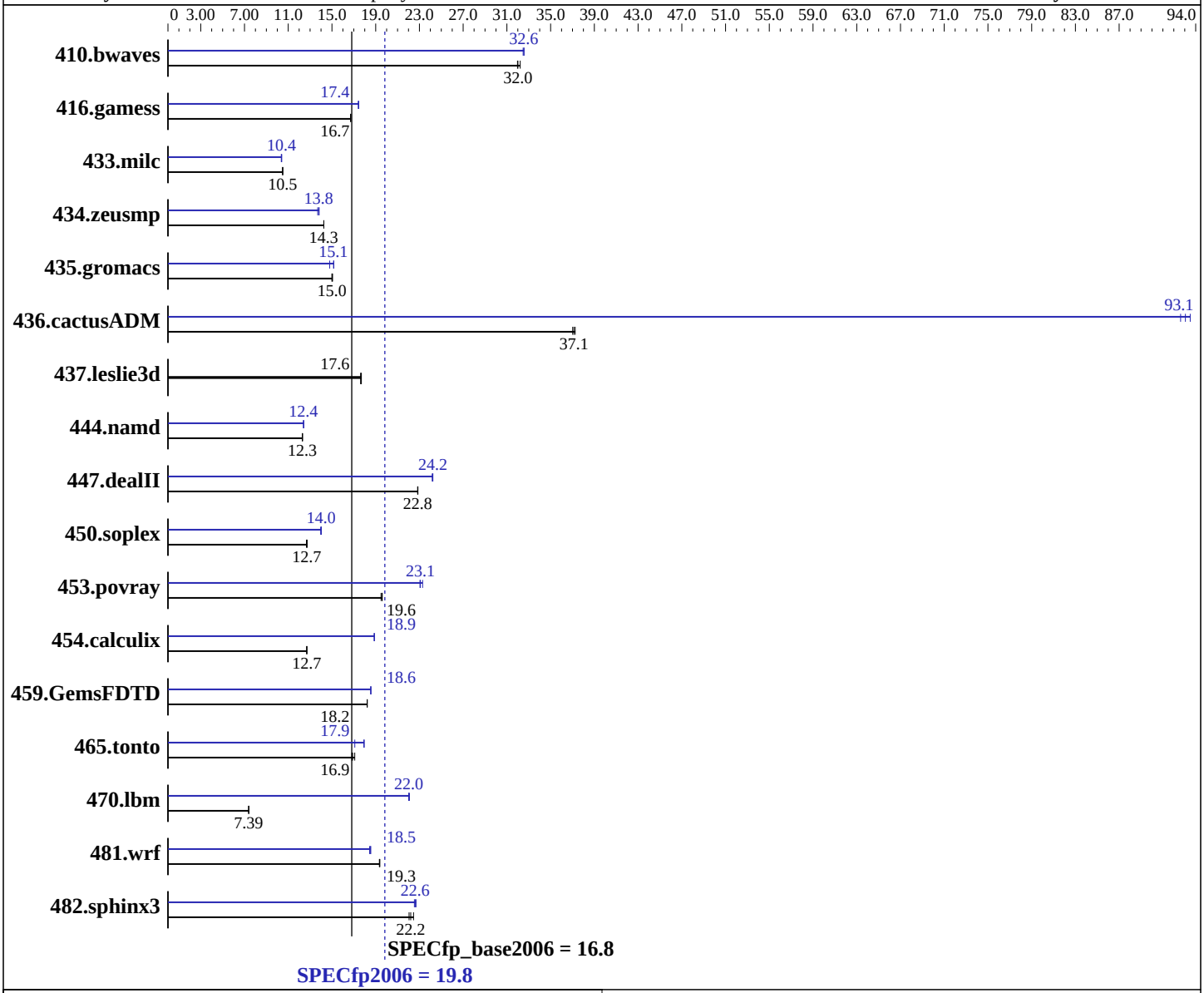
ProLiant BL460c
(2.33 GHz, Intel Xeon E5410)

SPECfp®2006 = 19.8

SPECfp_base2006 = 16.8

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

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




## Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E5410 |
| CPU Characteristics: | 2.33 GHz, 2x6 MB L2 shared, 1333 MHz system bus |
| CPU MHz: | 2333 |
| 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<br>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: 16 GB (8x2 GB PC2-5300F CL5)
Disk Subsystem: 1x72 GB 15 K SAS
Other Hardware: None

Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: binutils-2.17.50

## Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | **425** | **32.0** | 422 | 32.2 | 425 | 32.0 | **417** | **32.6** | 418 | 32.5 | 417 | 32.6 |
| 416.gamess | 1172 | 16.7 | 1171 | 16.7 | **1171** | **16.7** | 1122 | 17.5 | 1125 | 17.4 | **1123** | **17.4** |
| 433.milc | 874 | 10.5 | 875 | 10.5 | **875** | **10.5** | **883** | **10.4** | 883 | 10.4 | 886 | 10.4 |
| 434.zeusmp | **638** | **14.3** | 638 | 14.3 | 638 | 14.3 | 664 | 13.7 | **660** | **13.8** | 658 | 13.8 |
| 435.gromacs | **476** | **15.0** | 476 | 15.0 | 474 | 15.1 | **471** | **15.1** | 483 | 14.8 | 471 | 15.2 |
| 436.cactusADM | 323 | 37.0 | **322** | **37.1** | 321 | 37.2 | 129 | 92.6 | 128 | 93.5 | **128** | **93.1** |
| 437.leslie3d | 531 | 17.7 | 533 | 17.6 | **533** | **17.6** | 531 | 17.7 | 533 | 17.6 | **533** | **17.6** |
| 444.namd | **652** | **12.3** | 652 | 12.3 | 652 | 12.3 | 646 | 12.4 | **647** | **12.4** | 647 | 12.4 |
| 447.dealII | 501 | 22.8 | **501** | **22.8** | 500 | 22.9 | 472 | 24.2 | 473 | 24.2 | **472** | **24.2** |
| 450.soplex | **656** | **12.7** | 655 | 12.7 | 659 | 12.7 | 594 | 14.0 | 597 | 14.0 | **595** | **14.0** |
| 453.povray | 272 | 19.6 | **272** | **19.6** | 273 | 19.5 | **230** | **23.1** | 228 | 23.3 | 231 | 23.1 |
| 454.calculix | 650 | 12.7 | **650** | **12.7** | 649 | 12.7 | 437 | 18.9 | 437 | 18.9 | **437** | **18.9** |
| 459.GemsFDTD | 582 | 18.2 | 582 | 18.2 | **582** | **18.2** | **572** | **18.6** | 572 | 18.6 | 572 | 18.5 |
| 465.tonto | 576 | 17.1 | **582** | **16.9** | 585 | 16.8 | 548 | 18.0 | 576 | 17.1 | **549** | **17.9** |
| 470.lbm | **1859** | **7.39** | 1858 | 7.40 | 1862 | 7.38 | 622 | 22.1 | **624** | **22.0** | 624 | 22.0 |
| 481.wrf | 576 | 19.4 | 577 | 19.3 | **577** | **19.3** | **603** | **18.5** | 606 | 18.4 | 602 | 18.5 |
| 482.sphinx3 | 884 | 22.1 | 868 | 22.5 | **878** | **22.2** | 859 | 22.7 | 865 | 22.5 | **862** | **22.6** |

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
 OMP_NUM_THREADS set to number of cores
 KMP_AFFINITY set to physical,0
 KMP_STACKSIZE set to 200M
```

## 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 -parallel

C++ benchmarks:
-fast -parallel

Fortran benchmarks:
-fast -parallel

Benchmarks using both Fortran and C:
-fast -parallel

## 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:
`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`
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 -parallel

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: basepeak = yes

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0 -prefetch -parallel

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 -parallel -prefetch -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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