# SPEC® CFP2006 Result

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## Hewlett-Packard Company

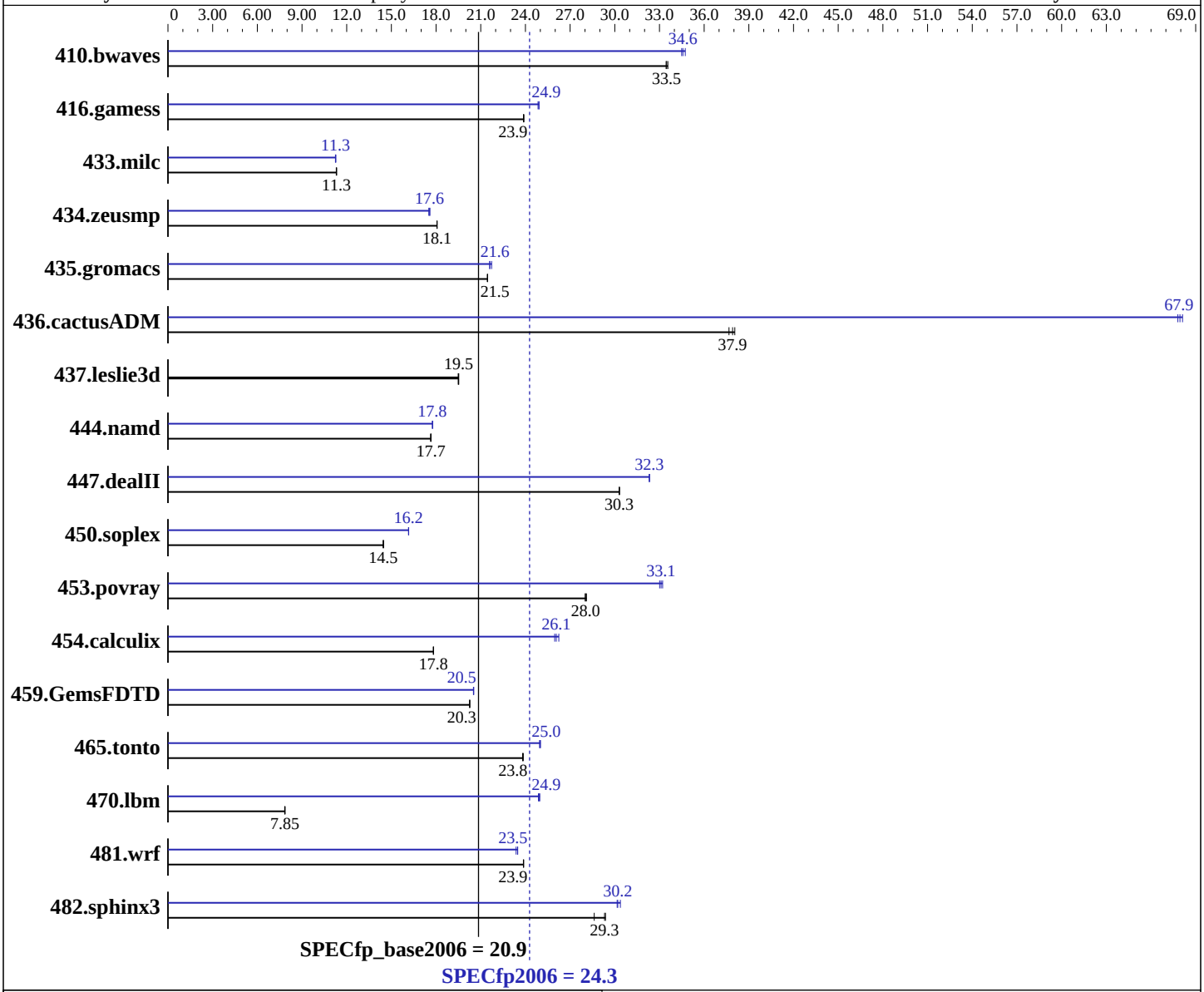
ProLiant DL360 G5
(3.33 GHz, Intel Xeon processor X5260)

SPECfp®2006 = 24.3

SPECfp_base2006 = 20.9

**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 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 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 406 | 33.4 | 405 | 33.6 | **406** | **33.5** | 394 | 34.5 | 391 | 34.7 | **393** | **34.6** |
| 416.gamess | 820 | 23.9 | **820** | **23.9** | 819 | 23.9 | **786** | **24.9** | 788 | 24.8 | 786 | 24.9 |
| 433.milc | **811** | **11.3** | 812 | 11.3 | 811 | 11.3 | 816 | 11.2 | **815** | **11.3** | 815 | 11.3 |
| 434.zeusmp | 504 | 18.1 | 504 | 18.1 | **504** | **18.1** | 517 | 17.6 | **518** | **17.6** | 520 | 17.5 |
| 435.gromacs | 333 | 21.4 | **333** | **21.5** | 333 | 21.5 | **330** | **21.6** | 331 | 21.6 | 329 | 21.7 |
| 436.cactusADM | **315** | **37.9** | 314 | 38.1 | 317 | 37.7 | 176 | 67.8 | **176** | **67.9** | 175 | 68.1 |
| 437.leslie3d | 482 | 19.5 | **482** | **19.5** | 482 | 19.5 | 482 | 19.5 | **482** | **19.5** | 482 | 19.5 |
| 444.namd | 455 | 17.6 | **454** | **17.7** | 454 | 17.7 | 452 | 17.8 | **452** | **17.8** | 451 | 17.8 |
| 447.dealII | 378 | 30.3 | 377 | 30.3 | **378** | **30.3** | **354** | **32.3** | 354 | 32.3 | 354 | 32.3 |
| 450.soplex | 576 | 14.5 | 577 | 14.4 | **577** | **14.5** | 516 | 16.2 | **516** | **16.2** | 516 | 16.2 |
| 453.povray | 190 | 28.0 | **190** | **28.0** | 189 | 28.1 | **161** | **33.1** | 161 | 33.0 | 160 | 33.2 |
| 454.calculix | 463 | 17.8 | 463 | 17.8 | **463** | **17.8** | 318 | 26.0 | **316** | **26.1** | 314 | 26.2 |
| 459.GemsFDTD | 524 | 20.3 | **524** | **20.3** | 524 | 20.3 | 517 | 20.5 | **517** | **20.5** | 517 | 20.5 |
| 465.tonto | 413 | 23.9 | **413** | **23.8** | 413 | 23.8 | 393 | 25.0 | **394** | **25.0** | 394 | 25.0 |
| 470.lbm | **1751** | **7.85** | 1753 | 7.84 | 1746 | 7.87 | **551** | **24.9** | 550 | 25.0 | 552 | 24.9 |
| 481.wrf | 468 | 23.9 | 468 | 23.9 | **468** | **23.9** | 476 | 23.5 | 478 | 23.4 | **476** | **23.5** |
| 482.sphinx3 | 681 | 28.6 | **665** | **29.3** | 663 | 29.4 | 646 | 30.2 | **645** | **30.2** | 642 | 30.4 |

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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