SPEC® CFP2006 Result

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Hewlett-Packard Company

ProLiant DL160 G5
(3.4 GHz, Intel Xeon X5272)

$SPECfp®\_rate2006 =$ 34.8

$SPECfp\_rate\_base2006 =$ 31.6

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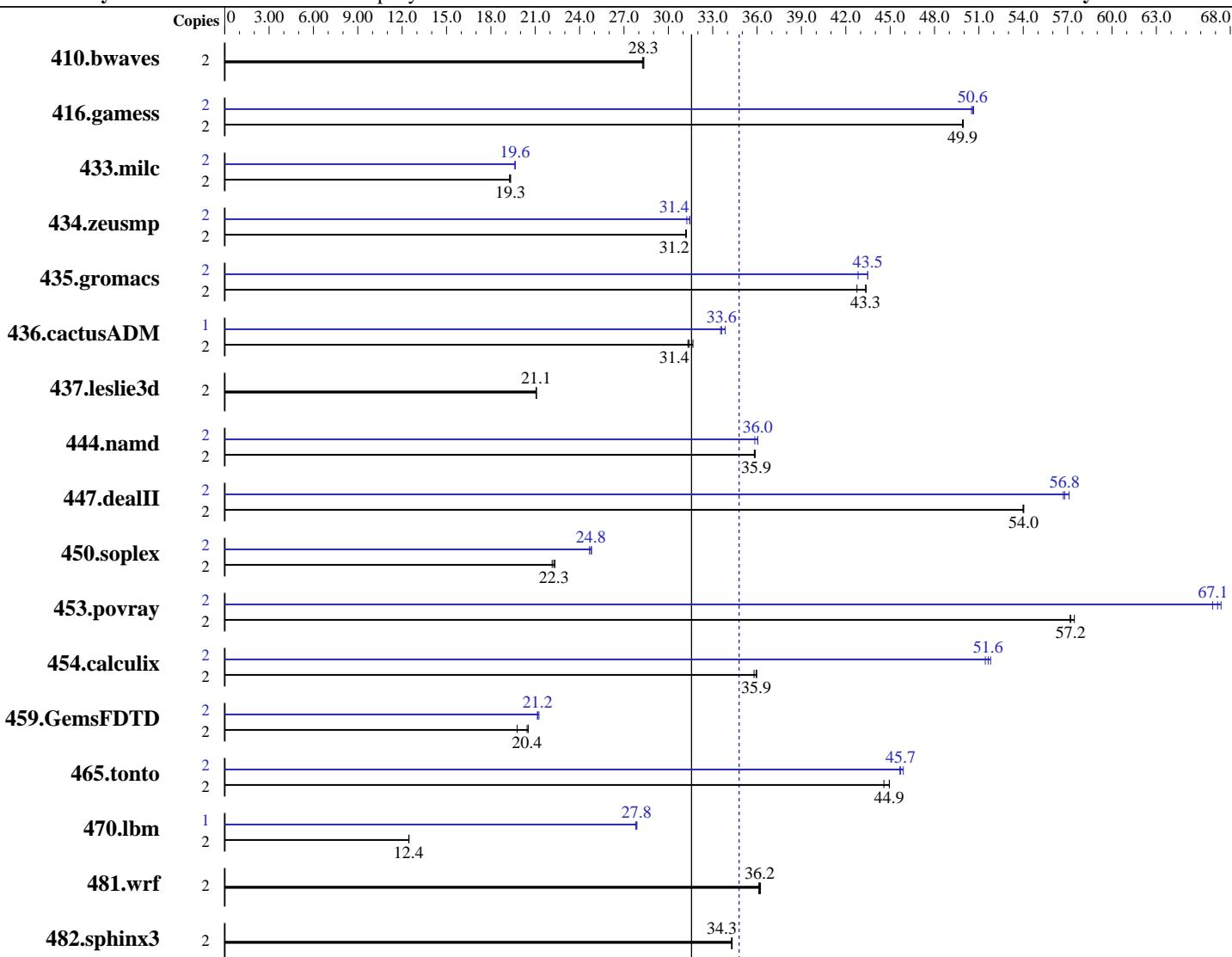**Test sponsor:** Hewlett-Packard Company
Tested by: Hewlett-Packard Company

Test date: Jul-2008
Hardware Availability: May-2008
Software Availability: Nov-2007

SPECfp_rate_base2006 = 31.6

SPECfp_rate2006 = 34.8

Copies	
410.bwaves	2 — 28.3
416.gamess	2 — 50.6 / 2 — 49.9
433.milc	2 — 19.6 / 2 — 19.3
434.zeusmp	2 — 31.4 / 2 — 31.2
435.gromacs	2 — 43.5 / 2 — 43.3
436.cactusADM	1 — 33.6 / 2 — 31.4
437.leslie3d	2 — 21.1
444.namd	2 — 36.0 / 2 — 35.9
447.dealII	2 — 56.8 / 2 — 54.0
450.soplex	2 — 24.8 / 2 — 22.3
453.povray	2 — 67.1 / 2 — 57.2
454.calculix	2 — 51.6 / 2 — 35.9
459.GemsFDTD	2 — 21.2 / 2 — 20.4
465.tonto	2 — 45.7 / 2 — 44.9
470.lbm	1 — 27.8 / 2 — 12.4
481.wrf	2 — 36.2
482.sphinx3	2 — 34.3

Hardware

CPU Name: Intel Xeon X5272
CPU Characteristics: 3.4 GHz, 6 MB L2 shared, 1600 MHz system bus
CPU MHz: 3400
FPU: Integrated
CPU(s) enabled: 2 cores, 1 chip, 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

Continued on next page

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)

Continued on next page

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L3 Cache:	None
Other Cache:	None
Memory:	32 GB (8x4 GB PC2-6400F CL6)
Disk Subsystem:	1x250 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	2	962	28.3	**960**	**28.3**	959	28.3	2	962	28.3	**960**	**28.3**	959	28.3
416.gamess	2	785	49.9	**785**	**49.9**	784	49.9	2	775	50.5	773	50.6	**774**	**50.6**
433.milc	2	953	19.3	**950**	**19.3**	950	19.3	2	935	19.6	935	19.6	**935**	**19.6**
434.zeusmp	2	**584**	**31.2**	584	31.2	583	31.2	2	579	31.5	**579**	**31.4**	582	31.3
435.gromacs	2	329	43.4	**330**	**43.3**	334	42.8	2	333	42.8	328	43.5	**328**	**43.5**
436.cactusADM	2	763	31.3	**761**	**31.4**	755	31.7	1	356	33.5	**356**	**33.6**	353	33.8
437.leslie3d	2	**892**	**21.1**	893	21.1	892	21.1	2	**892**	**21.1**	893	21.1	892	21.1
444.namd	2	**447**	**35.9**	448	35.8	447	35.9	2	**445**	**36.0**	447	35.8	445	36.1
447.dealII	2	423	54.0	424	54.0	**424**	**54.0**	2	401	57.1	403	56.7	**403**	**56.8**
450.soplex	2	753	22.1	747	22.3	**749**	**22.3**	2	672	24.8	**674**	**24.8**	676	24.7
453.povray	2	**186**	**57.2**	186	57.2	185	57.5	2	159	66.8	158	67.4	**158**	**67.1**
454.calculix	2	**459**	**35.9**	461	35.8	459	36.0	2	**320**	**51.6**	321	51.4	319	51.8
459.GemsFDTD	2	1073	19.8	1033	20.5	**1038**	**20.4**	2	1003	21.1	998	21.3	**1003**	**21.2**
465.tonto	2	438	44.9	**438**	**44.9**	441	44.6	2	429	45.9	**431**	**45.7**	431	45.7
470.lbm	2	2204	12.5	**2208**	**12.4**	2208	12.4	1	493	27.9	**494**	**27.8**	494	27.8
481.wrf	2	619	36.1	617	36.2	**618**	**36.2**	2	619	36.1	617	36.2	**618**	**36.2**
482.sphinx3	2	1136	34.3	**1137**	**34.3**	1137	34.3	2	1136	34.3	**1137**	**34.3**	1137	34.3

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.

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

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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):
```
icc
```

```
470.lbm: /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
      481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
   482.sphinx3: -DSPEC_CPU_LP64
```

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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: `basepeak = yes`

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: `basepeak = yes`

  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`

  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`

Continued on next page

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Peak Optimization Flags (Continued)

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.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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