SPEC® CFP2006 Result

Hewlett-Packard Company

ProLiant DL180 G6
(3.06 GHz, Intel Xeon X5675)

$SPECfp^{®}2006 =$ 60.4

$SPECfp\_base2006 =$ 57.1

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

Test date: Jan-2011
Hardware Availability: Feb-2011
Software Availability: Apr-2011

Benchmark	Value (blue)	Value (black)
410.bwaves	176	175
416.gamess	27.8	24.2
433.milc	48.4	47.9
434.zeusmp		116
435.gromacs	23.5	22.1
436.cactusADM		286
437.leslie3d		116
444.namd	19.8	19.5
447.dealII		40.2
450.soplex		32.1
453.povray	38.9	30.7
454.calculix	33.3	29.9
459.GemsFDTD	93.1	86.9
465.tonto	33.1	25.8
470.lbm		290
481.wrf		50.7
482.sphinx3	59.2	54.9

SPECfp_base2006 = 57.1
SPECfp2006 = 60.4

Hardware

CPU Name:	Intel Xeon X5675
CPU Characteristics:	Intel Turbo Boost Technology up to 3.46 GHz
CPU MHz:	3067
FPU:	Integrated
CPU(s) enabled:	12 cores, 2 chips, 6 cores/chip
CPU(s) orderable:	1,2 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core

Software

Operating System:	SUSE Linux Enterprise Server 11 (x86_64) SP1, Kernel 2.6.32.12-0.7-default
Compiler:	Intel C++ Intel 64 Compiler XE for applications running on Intel 64 Version 12.0 Update 3
Auto Parallel:	Yes
File System:	ext3
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit

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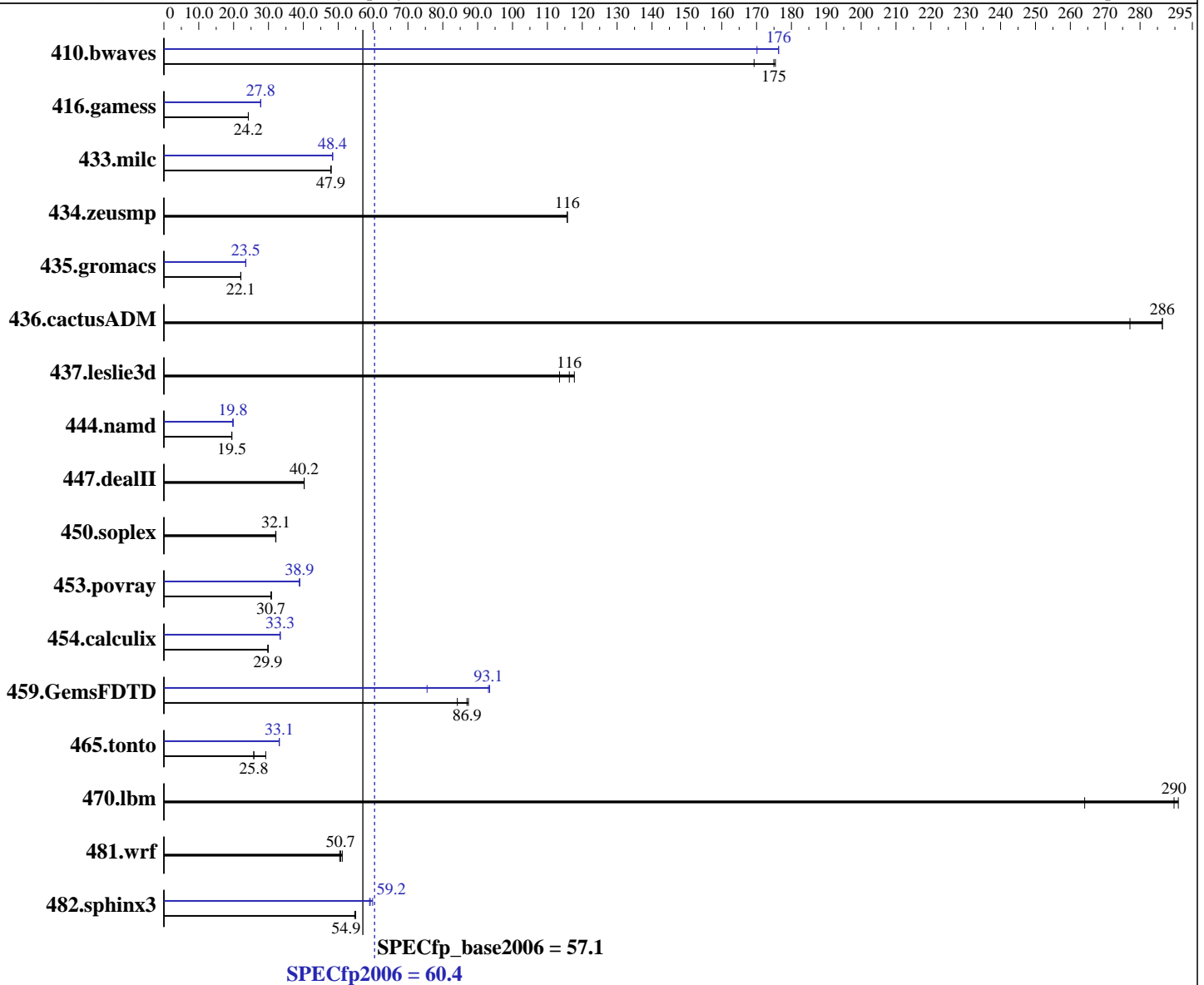|	
CPU2006 license: 3	**Test date:** Jan-2011
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L3 Cache: 12 MB I+D on chip per chip	Peak Pointers: 32/64-bit
Other Cache: None	Other Software: Microquill SmartHeap V9.01
Memory: 96 GB (12 x 8 GB 2Rx4 PC3-10600R-9, ECC)	
Disk Subsystem: 1 x 146 GB 15 K SAS	
Other Hardware: None	

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	**77.7**	**175**	77.5	175	80.3	169	**77.1**	**176**	77.1	176	79.9	170
416.gamess	808	24.2	809	24.2	**809**	**24.2**	705	27.8	705	27.8	**705**	**27.8**
433.milc	**192**	**47.9**	191	48.0	192	47.9	**190**	**48.4**	190	48.4	190	48.4
434.zeusmp	78.7	116	**78.7**	**116**	78.7	116	78.7	116	**78.7**	**116**	78.7	116
435.gromacs	**324**	**22.1**	323	22.1	324	22.0	304	23.5	304	23.5	**304**	**23.5**
436.cactusADM	**41.7**	**286**	41.7	286	43.1	277	**41.7**	**286**	41.7	286	43.1	277
437.leslie3d	82.8	113	79.8	118	**80.8**	**116**	82.8	113	79.8	118	**80.8**	**116**
444.namd	411	19.5	**412**	**19.5**	412	19.5	405	19.8	404	19.8	**405**	**19.8**
447.dealII	284	40.2	284	40.2	**284**	**40.2**	284	40.2	284	40.2	**284**	**40.2**
450.soplex	260	32.0	260	32.1	**260**	**32.1**	260	32.0	260	32.1	**260**	**32.1**
453.povray	173	30.7	172	30.8	**173**	**30.7**	137	38.9	**137**	**38.9**	137	38.9
454.calculix	**276**	**29.9**	277	29.8	276	29.9	247	33.3	**247**	**33.3**	247	33.4
459.GemsFDTD	121	87.4	126	84.2	**122**	**86.9**	114	93.4	**114**	**93.1**	141	75.5
465.tonto	**381**	**25.8**	337	29.2	382	25.8	298	33.1	297	33.1	**297**	**33.1**
470.lbm	47.2	291	**47.4**	**290**	52.0	264	47.2	291	**47.4**	**290**	52.0	264
481.wrf	222	50.4	**220**	**50.7**	218	51.2	222	50.4	**220**	**50.7**	218	51.2
482.sphinx3	354	55.0	356	54.7	**355**	**54.9**	**329**	**59.2**	330	59.0	326	59.9

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

Operating System Notes

```
'nodev   /mnt/hugepages   hugetlbfs   defaults   0 0' added to /etc/fstab
'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
echo 900 > /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

General Notes

```
OMP_NUM_THREADS set to number of cores
Binaries were compiled on RHEL5.5 with Binutils binutils-2.17.50.0.6-14.el5
```

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Base Compiler Invocation

C benchmarks:
        icc   -m64

C++ benchmarks:
        icpc   -m64

Fortran benchmarks:
        ifort -m64

Benchmarks using both Fortran and C:
        icc   -m64 ifort -m64

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:
        -xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
        -ansi-alias

C++ benchmarks:
        -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias

Fortran benchmarks:
        -xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Benchmarks using both Fortran and C:
        -xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
        -ansi-alias

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Peak Compiler Invocation

C benchmarks:
    icc   -m64

C++ benchmarks (except as noted below):
    icpc -m64

   453.povray: icpc -m64
         -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

Fortran benchmarks (except as noted below):
    ifort -m64

  459.GemsFDTD: ifort -m64
         -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

   465.tonto: ifort -m64
         -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

Benchmarks using both Fortran and C:
    icc   -m64 ifort -m64

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

     433.milc: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
          -no-prec-div(pass 2) -prof-use(pass 2) -static -auto-ilp32
          -ansi-alias

     470.lbm: basepeak = yes

  482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias
          -parallel

C++ benchmarks:

    444.namd: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
          -no-prec-div(pass 2) -prof-use(pass 2) -fno-alias
          -auto-ilp32

   447.dealII: basepeak = yes

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Peak Optimization Flags (Continued)

450.soplex: basepeak = yes

453.povray: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -parallel
-static

416.gamess: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -unroll2
-inline-level=0 -scalar-rep- -static

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -unroll2
-inline-level=0 -opt-prefetch -parallel

465.tonto: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -inline-calloc
-opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

435.gromacs: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -static -auto-ilp32
-ansi-alias

436.cactusADM: basepeak = yes

454.calculix: -xSSE4.2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias

481.wrf: basepeak = yes

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revA.20110303.02.html
http://www.spec.org/cpu2006/flags/HP-Intel-Linux-Settings-flags.20101109.html

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You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revA.20110303.02.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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