SPEC® CFP2006 Result

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Hewlett-Packard Company

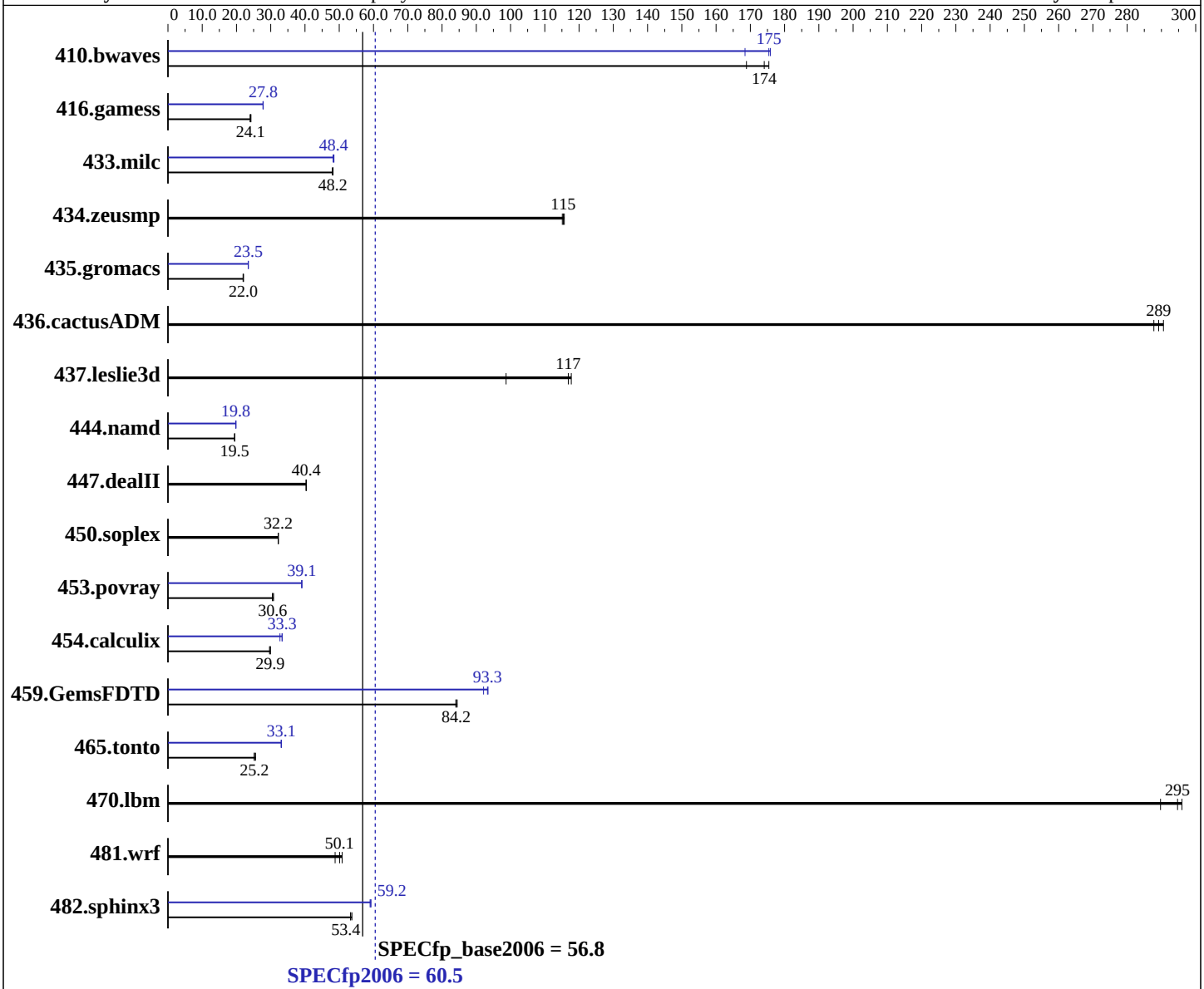
ProLiant BL490c G7
(3.06 GHz, Intel Xeon X5675)

SPECfp®2006 = 60.5

SPECfp_base2006 = 56.8

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



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

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Software

Operating System:	SUSE Linux Enterprise Server 11 (x86_64) SP1, Kernel 2.6.32.12-0.7-default
Compiler:	Intel C++ and Fortran 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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L3 Cache: 12 MB I+D on chip per chip
Other Cache: None
Memory: 48 GB (12 x 4 GB 2Rx4 PC3-10600R-9, ECC)
Disk Subsystem: 1 x 120 GB SATA SSD
Other Hardware: None

Peak Pointers: 32/64-bit
Other Software: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	80.5	169	77.5	175	**78.1**	**174**	77.3	176	**77.5**	**175**	80.7	168
416.gamess	**811**	**24.1**	817	24.0	808	24.2	706	27.7	**704**	**27.8**	704	27.8
433.milc	**191**	**48.2**	191	48.0	190	48.2	190	48.2	**190**	**48.4**	189	48.5
434.zeusmp	78.7	116	79.1	115	**78.9**	**115**	78.7	116	79.1	115	**78.9**	**115**
435.gromacs	324	22.0	**324**	**22.0**	326	21.9	304	23.5	**304**	**23.5**	305	23.4
436.cactusADM	41.1	291	**41.3**	**289**	41.5	288	41.1	291	**41.3**	**289**	41.5	288
437.leslie3d	**80.4**	**117**	95.2	98.7	79.8	118	**80.4**	**117**	95.2	98.7	79.8	118
444.namd	412	19.5	**412**	**19.5**	412	19.5	405	19.8	405	19.8	**405**	**19.8**
447.dealII	284	40.3	**284**	**40.4**	283	40.4	284	40.3	**284**	**40.4**	283	40.4
450.soplex	259	32.2	**259**	**32.2**	259	32.2	259	32.2	**259**	**32.2**	259	32.2
453.povray	173	30.8	**174**	**30.6**	175	30.5	136	39.0	136	39.1	**136**	**39.1**
454.calculix	278	29.6	**276**	**29.9**	276	29.9	252	32.7	**248**	**33.3**	247	33.3
459.GemsFDTD	126	84.4	**126**	**84.2**	126	84.0	115	92.1	**114**	**93.3**	114	93.4
465.tonto	**390**	**25.2**	385	25.6	391	25.2	**297**	**33.1**	297	33.1	297	33.1
470.lbm	**46.6**	**295**	46.4	296	47.4	290	**46.6**	**295**	46.4	296	47.4	290
481.wrf	229	48.8	220	50.8	**223**	**50.1**	229	48.8	220	50.8	**223**	**50.1**
482.sphinx3	363	53.7	**365**	**53.4**	366	53.3	329	59.3	**329**	**59.2**	330	59.0

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
```

Platform Notes

```
BIOS configuration:
 HP Power Profile set to Maximum Performance
 Thermal Configuration set to Increased Cooling
 Data Reuse set to Disabled
 Intel Hyperthreading Options set to Disabled
```

General Notes

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

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
```

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Base Optimization Flags (Continued)

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`

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`

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Peak Optimization Flags (Continued)

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

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.20110216.00.html

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
http://www.spec.org/cpu2006/flags/HP-Intel-Linux-Settings-flags.20110216.00.xml

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Tested with SPEC CPU2006 v1.1.
Report generated on Wed Jul 23 16:50:55 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 8 March 2011.