



SPEC® CFP2006 Result

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Hewlett-Packard Company

SPECfp®2006 = **60.3**

ProLiant BL460c G7
(3.06 GHz, Intel Xeon X5675)

SPECfp_base2006 = **56.8**

CPU2006 license: 3

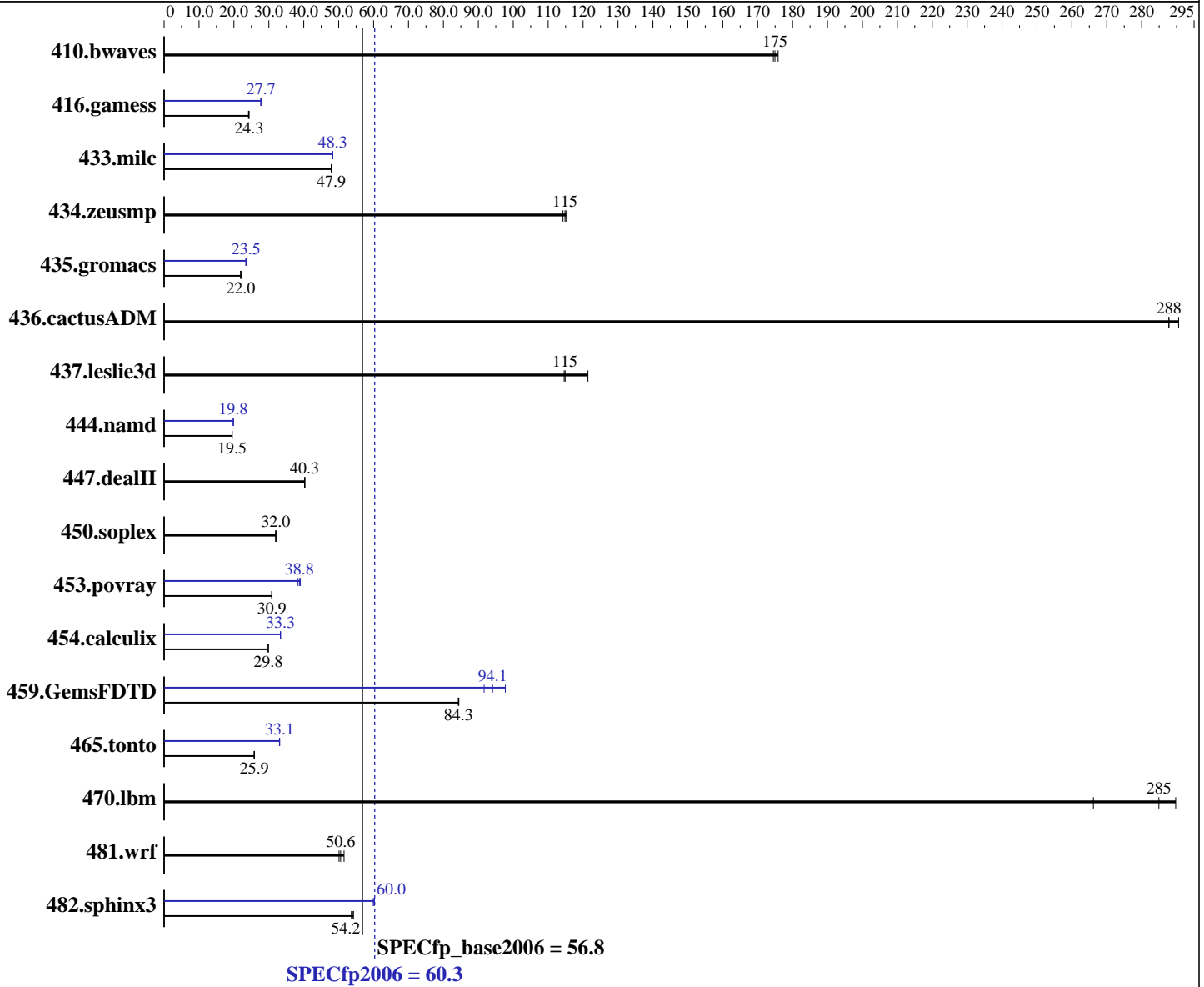
Test date: Jan-2011

Test sponsor: Hewlett-Packard Company

Hardware Availability: Feb-2011

Tested by: Hewlett-Packard Company

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

Continued on next page

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

Continued on next page



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L3 Cache: 12 MB I+D on chip per chip
Other Cache: None
Memory: 96 GB (12 x 8 GB 2Rx4 PC3-10600R-9, ECC)
Disk Subsystem: 1 x 146 GB 10 K SAS
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	<u>77.7</u>	<u>175</u>	77.3	176	77.9	175	<u>77.7</u>	<u>175</u>	77.3	176	77.9	175
416.gamess	805	24.3	<u>805</u>	<u>24.3</u>	810	24.2	705	27.8	<u>706</u>	<u>27.7</u>	707	27.7
433.milc	192	47.9	<u>192</u>	<u>47.9</u>	192	47.9	190	48.3	<u>190</u>	<u>48.3</u>	190	48.3
434.zeusmp	79.7	114	<u>79.3</u>	<u>115</u>	79.1	115	79.7	114	<u>79.3</u>	<u>115</u>	79.1	115
435.gromacs	<u>325</u>	<u>22.0</u>	326	21.9	324	22.0	304	23.5	305	23.4	<u>304</u>	<u>23.5</u>
436.cactusADM	41.5	288	<u>41.5</u>	<u>288</u>	41.1	291	41.5	288	<u>41.5</u>	<u>288</u>	41.1	291
437.leslie3d	82.0	115	<u>81.8</u>	<u>115</u>	77.4	121	82.0	115	<u>81.8</u>	<u>115</u>	77.4	121
444.namd	<u>412</u>	<u>19.5</u>	412	19.5	412	19.5	405	19.8	405	19.8	<u>405</u>	<u>19.8</u>
447.dealII	<u>284</u>	<u>40.3</u>	284	40.3	284	40.3	<u>284</u>	<u>40.3</u>	284	40.3	284	40.3
450.soplex	260	32.0	261	32.0	<u>261</u>	<u>32.0</u>	260	32.0	261	32.0	<u>261</u>	<u>32.0</u>
453.povray	173	30.8	<u>172</u>	<u>30.9</u>	172	30.9	136	39.0	<u>137</u>	<u>38.8</u>	139	38.3
454.calculix	<u>277</u>	<u>29.8</u>	277	29.8	276	29.9	248	33.3	<u>248</u>	<u>33.3</u>	247	33.3
459.GemsFDTD	<u>126</u>	<u>84.3</u>	126	84.4	126	84.3	109	97.7	116	91.7	<u>113</u>	<u>94.1</u>
465.tonto	<u>380</u>	<u>25.9</u>	382	25.7	380	25.9	297	33.1	<u>298</u>	<u>33.1</u>	298	33.0
470.lbm	<u>48.2</u>	<u>285</u>	51.6	266	47.4	290	<u>48.2</u>	<u>285</u>	51.6	266	47.4	290
481.wrf	217	51.5	<u>221</u>	<u>50.6</u>	223	50.1	217	51.5	<u>221</u>	<u>50.6</u>	223	50.1
482.sphinx3	363	53.6	360	54.2	<u>360</u>	<u>54.2</u>	324	60.2	327	59.7	<u>325</u>	<u>60.0</u>

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



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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

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

Continued on next page



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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`

Continued on next page



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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: basepeak = yes

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



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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.20100525.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.20100525.xml>

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