SPEC® CFP2006 Result
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Hewlett-Packard Company

ProLiant BL460c
(3.5 GHz, Intel Xeon X5270)

$SPECfp®\_rate2006 =$ 61.4

$SPECfp\_rate\_base2006 =$ 57.6

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

Test date: Aug-2008
Hardware Availability: Sep-2008
Software Availability: Nov-2008

Copies		Result
410.bwaves	4	37.1
416.gamess	4	106
	4	104
433.milc	4	33.5
	4	33.5
434.zeusmp	4	62.3
	4	60.7
435.gromacs	4	91.6
	4	91.3
436.cactusADM	1	82.7
	4	71.2
437.leslie3d	4	32.0
444.namd	4	76.0
447.dealII	4	105
	4	100
450.soplex	4	35.8
	4	32.5
453.povray	4	139
	4	116
454.calculix	4	102
	4	101
459.GemsFDTD	4	28.6
465.tonto	4	87.9
	4	81.5
470.lbm	2	38.9
	4	28.9
481.wrf	4	52.2
482.sphinx3	2	61.1
	4	50.3

SPECfp_rate_base2006 = 57.6

SPECfp_rate2006 = 61.4

Hardware

CPU Name:	Intel Xeon X5270
CPU Characteristics:	3.5 GHz, 6 MB L2 shared, 1333 MHz system bus
CPU MHz:	3500
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

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++ and Fortran Compiler 11.0 for Linux Build 20080730 Package ID: l_cproc_b_11.0.042, l_fproc_b_11.0.042
Auto Parallel:	Yes
File System:	ext3
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit

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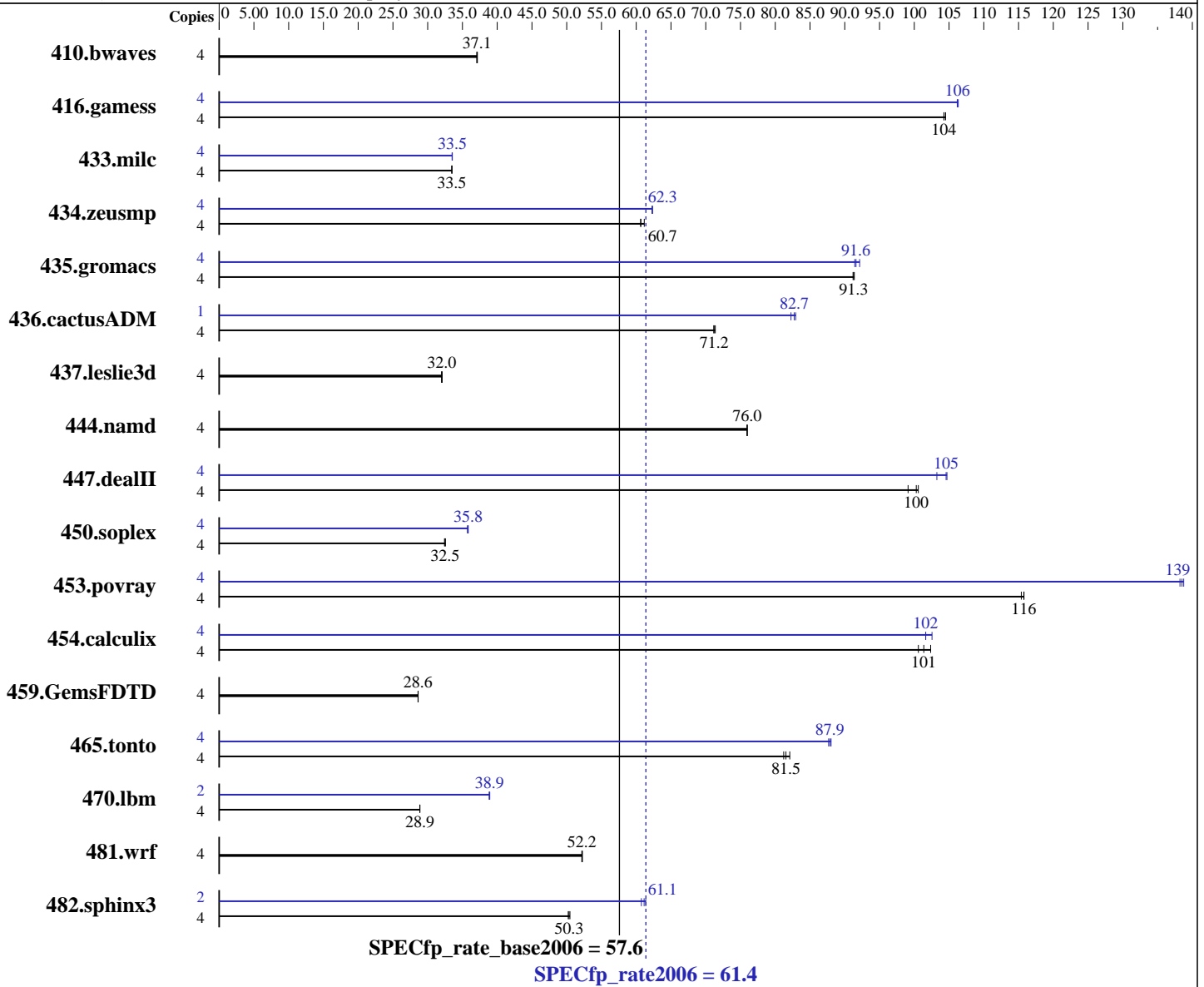|	
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L3 Cache:	None	Peak Pointers:	32/64-bit
Other Cache:	None	Other Software:	Binutils 2.18.50.0.7.20080502
Memory:	16 GB (8x2 GB PC2-5300F CL5)		
Disk Subsystem:	2x72 GB 10 K SAS		
Other Hardware:	None		

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	4	1463	37.1	1467	37.1	**1465**	**37.1**	4	1463	37.1	1467	37.1	**1465**	**37.1**
416.gamess	4	751	104	**751**	**104**	749	105	4	738	106	**737**	**106**	737	106
433.milc	4	1097	33.5	1097	33.5	**1097**	**33.5**	4	**1095**	**33.5**	1096	33.5	1095	33.5
434.zeusmp	4	**600**	**60.7**	600	60.6	595	61.2	4	585	62.3	**584**	**62.3**	584	62.3
435.gromacs	4	313	91.2	313	91.4	**313**	**91.3**	4	310	92.1	312	91.4	**312**	**91.6**
436.cactusADM	4	**671**	**71.2**	672	71.2	670	71.4	1	**144**	**82.7**	144	82.9	145	82.3
437.leslie3d	4	1175	32.0	**1174**	**32.0**	1172	32.1	4	1175	32.0	**1174**	**32.0**	1172	32.1
444.namd	4	422	75.9	422	76.0	**422**	**76.0**	4	422	75.9	422	76.0	**422**	**76.0**
447.dealII	4	**456**	**100**	455	101	462	99.1	4	**438**	**105**	443	103	437	105
450.soplex	4	1025	32.5	**1026**	**32.5**	1029	32.4	4	**932**	**35.8**	934	35.7	931	35.8
453.povray	4	184	115	184	116	**184**	**116**	4	153	139	**154**	**139**	154	138
454.calculix	4	**326**	**101**	322	102	328	101	4	322	103	325	102	**325**	**102**
459.GemsFDTD	4	1483	28.6	**1483**	**28.6**	1482	28.6	4	1483	28.6	**1483**	**28.6**	1482	28.6
465.tonto	4	**483**	**81.5**	479	82.1	485	81.2	4	**448**	**87.9**	449	87.7	447	88.0
470.lbm	4	1904	28.9	**1903**	**28.9**	1903	28.9	2	707	38.9	**707**	**38.9**	706	38.9
481.wrf	4	856	52.2	855	52.3	**856**	**52.2**	4	856	52.2	855	52.3	**856**	**52.2**
482.sphinx3	4	1552	50.2	1545	50.5	**1549**	**50.3**	2	642	60.7	**638**	**61.1**	635	61.4

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.
     taskset was used to bind processes to cores except
     for 436.cactusADM peak
```

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 64M
```

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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:
```
-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch
```

C++ benchmarks:
```
-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch
```

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Hardware Availability: Sep-2008

Software Availability: Nov-2008

Base Optimization Flags (Continued)

Fortran benchmarks:
```
-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch
```

Benchmarks using both Fortran and C:
```
-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch
```

Peak Compiler Invocation

C benchmarks (except as noted below):
```
icc
```

```
482.sphinx3: /opt/intel/Compiler/11.0/042/bin/ia32/icc
       -L/opt/intel/Compiler/11.0/042/ipp/ia32/lib
       -I/opt/intel/Compiler/11.0/042/ipp/ia32/include
```

C++ benchmarks (except as noted below):
```
icpc
```

```
450.soplex: /opt/intel/Compiler/11.0/042/bin/ia32/icpc
       -L/opt/intel/Compiler/11.0/042/ipp/ia32/lib
       -I/opt/intel/Compiler/11.0/042/ipp/ia32/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
     470.lbm: -DSPEC_CPU_LP64
     481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
```

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Peak Optimization Flags

C benchmarks:

> 433.milc: `-prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3`
> `-no-prec-div -static -fno-alias`

> 470.lbm: `-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch`
> `-auto-ilp32`

> 482.sphinx3: `-xSSE4.1 -ipo -O3 -no-prec-div -static -unroll2`

C++ benchmarks:

> 444.namd: `basepeak = yes`

> 447.dealII: `-prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3`
> `-no-prec-div -static -unroll2 -ansi-alias -scalar-rep-`

> 450.soplex: `-prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3`
> `-no-prec-div -static -opt-malloc-options=3`

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

Fortran benchmarks:

> 410.bwaves: `basepeak = yes`

> 416.gamess: `-prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3`
> `-no-prec-div -static -unroll2 -Ob0 -ansi-alias`
> `-scalar-rep-`

> 434.zeusmp: `-prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3`
> `-no-prec-div -static`

> 437.leslie3d: `basepeak = yes`

> 459.GemsFDTD: `basepeak = yes`

> 465.tonto: `-prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3`
> `-no-prec-div -static -unroll4 -auto`

Benchmarks using both Fortran and C:

> 435.gromacs: `-prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3`
> `-no-prec-div -static -opt-prefetch -auto-ilp32`

> 436.cactusADM: `-prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3`
> `-no-prec-div -static -unroll2 -opt-prefetch -parallel`
> `-auto-ilp32`

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Peak Optimization Flags (Continued)

454.calculix: `-xSSE4.1 -ipo -O3 -no-prec-div -static -auto-ilp32`

481.wrf: `basepeak = yes`

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/HP-Intel-Linux-Settings-flags.20090713.00.html
http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revD.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/HP-Intel-Linux-Settings-flags.20090713.00.xml
http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revD.xml

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For other inquiries, please contact webmaster@spec.org.

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