SPEC® CFP2006 Result
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IBM Corporation

IBM BladeCenter HX5 (Intel Xeon E7-8867L)

$SPECfp^{®}2006 =$ 49.4

$SPECfp\_base2006 =$ 45.4

CPU2006 license: 11	**Test date:** May-2011
Test sponsor: IBM Corporation	**Hardware Availability:** May-2011
Tested by: IBM Corporation	**Software Availability:** Apr-2011

Scale: 0 15.0 30.0 45.0 60.0 75.0 90.0 105 120 135 150 165 180 195 210 225 240 255 270 285 300 315 330 345 360 375 390 405 435

- 410.bwaves: 286
- 416.gamess: 20.8 / 15.6
- 433.milc: 28.7 / 28.8
- 434.zeusmp: 86.1
- 435.gromacs: 17.7 / 16.6
- 436.cactusADM: 284
- 437.leslie3d: 135
- 444.namd: 15.1 / 14.8
- 447.dealII: 29.9
- 450.soplex: 24.3
- 453.povray: 25.4 / 21.7
- 454.calculix: 25.2 / 20.8
- 459.GemsFDTD: 90.7 / 75.3
- 465.tonto: 25.4 / 16.1
- 470.lbm: 356
- 481.wrf: 27.1
- 482.sphinx3: 40.8 / 36.9

SPECfp_base2006 = 45.4

SPECfp2006 = 49.4

Hardware

CPU Name:	Intel Xeon E7-8867L
CPU Characteristics:	Intel Turbo Boost Technology up to 2.53 GHz
CPU MHz:	2133
FPU:	Integrated
CPU(s) enabled:	40 cores, 4 chips, 10 cores/chip, 2 threads/core
CPU(s) orderable:	1,2,3,4 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 SP1 (x86_64), 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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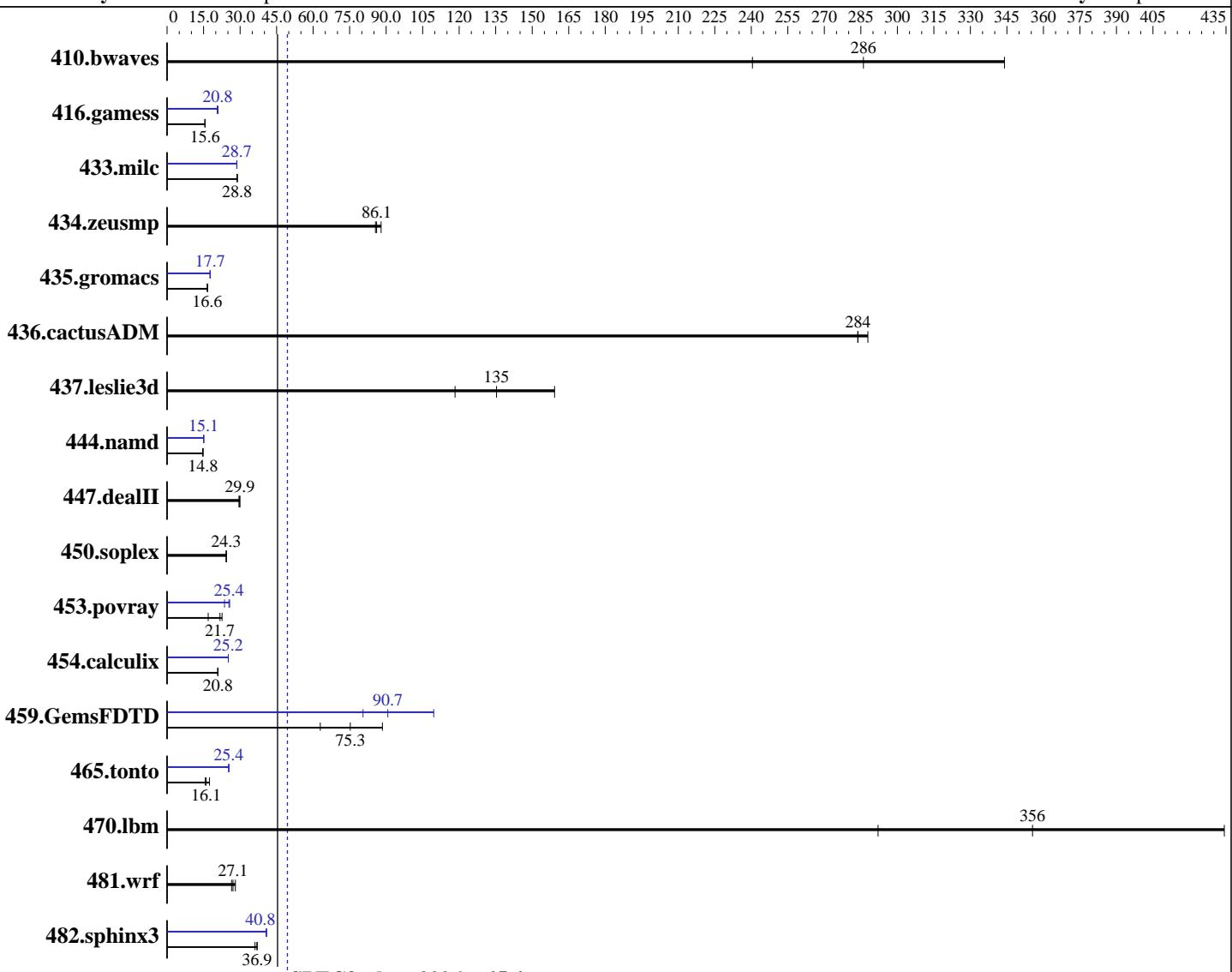|	
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L3 Cache:	30 MB I+D on chip per chip
Other Cache:	None
Memory:	256 GB (32 x 8 GB 4Rx8 PC3-8500R-7, ECC)
Disk Subsystem:	4 x 50 GB SSD, RAID 0
Other Hardware:	None

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

Results Table

Benchmark	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
410.bwaves	**47.5**	**286**	56.5	240	39.5	344	**47.5**	**286**	56.5	240	39.5	344
416.gamess	**1256**	**15.6**	1254	15.6	1259	15.5	**943**	**20.8**	949	20.6	935	20.9
433.milc	**319**	**28.8**	319	28.8	318	28.9	**320**	**28.7**	320	28.6	320	28.7
434.zeusmp	**106**	**86.1**	103	87.9	106	85.6	**106**	**86.1**	103	87.9	106	85.6
435.gromacs	431	16.5	**431**	**16.6**	430	16.6	403	17.7	404	17.7	**404**	**17.7**
436.cactusADM	41.5	288	**42.1**	**284**	42.1	284	41.5	288	**42.1**	**284**	42.1	284
437.leslie3d	59.0	159	79.5	118	**69.5**	**135**	59.0	159	79.5	118	**69.5**	**135**
444.namd	548	14.6	543	14.8	**543**	**14.8**	533	15.1	533	15.1	**533**	**15.1**
447.dealII	383	29.9	388	29.5	**383**	**29.9**	383	29.9	388	29.5	**383**	**29.9**
450.soplex	**343**	**24.3**	343	24.3	343	24.3	**343**	**24.3**	343	24.3	343	24.3
453.povray	315	16.9	**245**	**21.7**	236	22.6	**209**	**25.4**	225	23.6	207	25.7
454.calculix	394	20.9	396	20.8	**396**	**20.8**	328	25.2	328	25.2	**328**	**25.2**
459.GemsFDTD	**141**	**75.3**	120	88.5	169	62.9	132	80.5	**117**	**90.7**	96.8	110
465.tonto	**612**	**16.1**	565	17.4	627	15.7	388	25.4	**388**	**25.4**	388	25.3
470.lbm	**38.6**	**356**	47.0	292	31.6	434	**38.6**	**356**	47.0	292	31.6	434
481.wrf	422	26.5	**412**	**27.1**	398	28.1	422	26.5	**412**	**27.1**	398	28.1
482.sphinx3	539	36.1	**528**	**36.9**	526	37.0	479	40.7	477	40.9	**478**	**40.8**

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

Operating System Notes

```
'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
echo 1 > /proc/sys/vm/zone_reclaim_mode
'mount -t hugetlbfs nodev /mnt/hugepages' was used to enable large pages
echo 900 > /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

Platform Notes

```
BIOS Settings:
Turbo Boost Power Optimization set to Traditional
```

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General Notes

```
OMP_NUM_THREADS set to number of cores
Binaries were compiled on RHEL5.5
```

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:
```
icpc   -m64
```

Fortran benchmarks:
```
ifort -m64
```

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
```

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Peak Optimization Flags (Continued)

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
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

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
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

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
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

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-revB.html
http://www.spec.org/cpu2006/flags/IBM-platform-linux64-revA.html

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