SPEC® CFP2006 Result

IBM Corporation

IBM System x3250 M4 (Intel Pentium G840)

$SPECfp^®\_rate2006 =$ 62.0

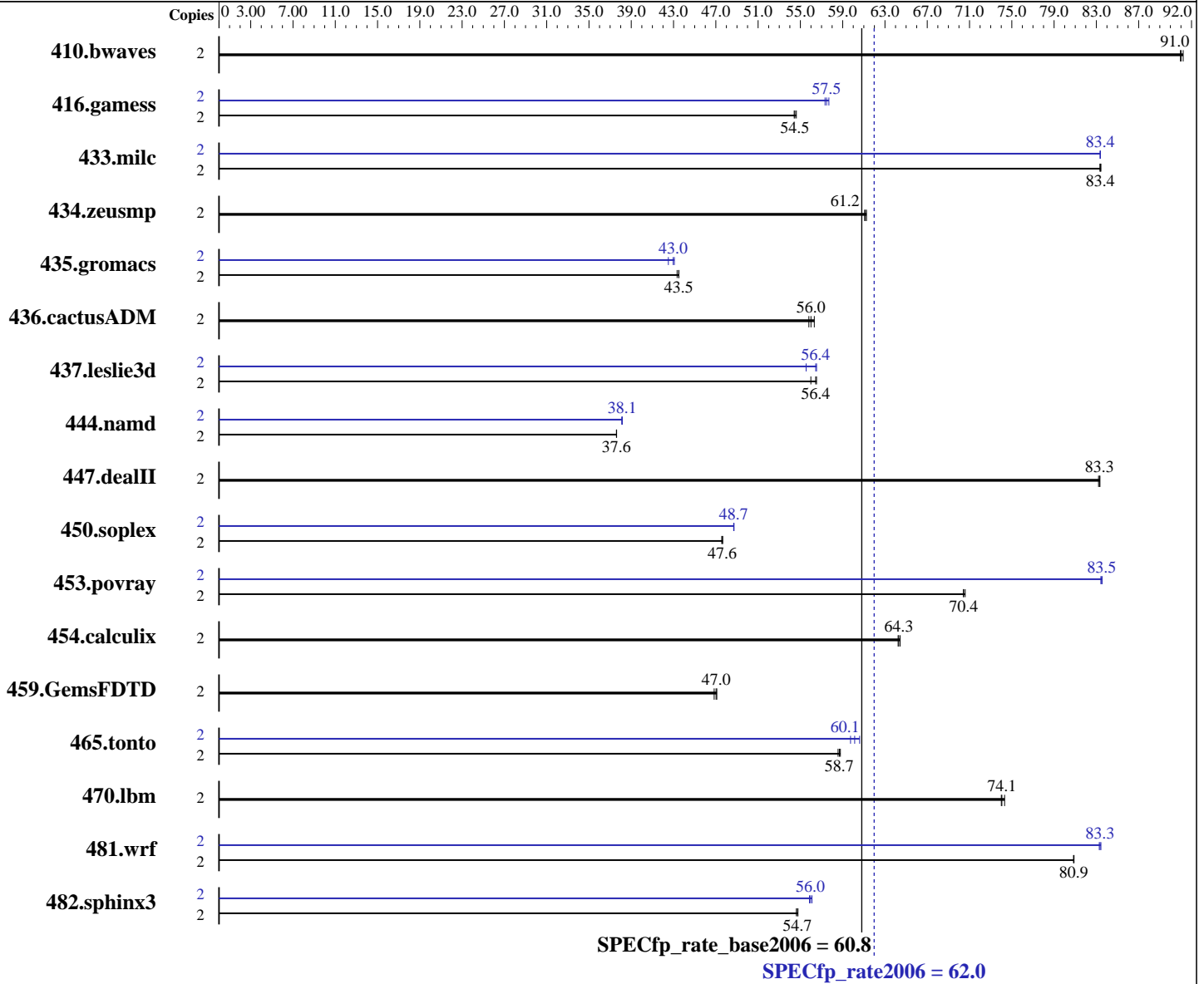$SPECfp\_rate\_base2006 =$ 60.8

CPU2006 license: 11

Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Nov-2011

Hardware Availability: Oct-2011

Software Availability: Aug-2011

SPECfp_rate_base2006 = 60.8

SPECfp_rate2006 = 62.0

Benchmark	Copies	Result
410.bwaves	2	91.0
416.gamess	2	57.5
416.gamess	2	54.5
433.milc	2	83.4
433.milc	2	83.4
434.zeusmp	2	61.2
435.gromacs	2	43.0
435.gromacs	2	43.5
436.cactusADM	2	56.0
437.leslie3d	2	56.4
437.leslie3d	2	56.4
444.namd	2	38.1
444.namd	2	37.6
447.dealII	2	83.3
450.soplex	2	48.7
450.soplex	2	47.6
453.povray	2	83.5
453.povray	2	70.4
454.calculix	2	64.3
459.GemsFDTD	2	47.0
465.tonto	2	60.1
465.tonto	2	58.7
470.lbm	2	74.1
481.wrf	2	83.3
481.wrf	2	80.9
482.sphinx3	2	56.0
482.sphinx3	2	54.7

Hardware

CPU Name: Intel Pentium G840

CPU Characteristics:

CPU MHz: 2800

FPU: Integrated

CPU(s) enabled: 2 cores, 1 chip, 2 cores/chip

CPU(s) orderable: 1 chip

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: Red Hat Enterprise Linux Server Release 6.1, Kernel 2.6.32-131.0.15.el6.x86_64

Compiler: C/C++/Fortran: Version 12.1.0.225 of Intel Compiler XE Build 20110803

Auto Parallel: No

File System: ext4

System State: Run level 3 (multi-user)

Base Pointers: 32/64-bit

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L3 Cache:	3 MB I+D on chip per chip
Other Cache:	None
Memory:	16 GB (2 x 8 GB 2Rx8 PC3-10600E-9, ECC)
Disk Subsystem:	1 x 146 GB SAS, 15000 RPM
Other Hardware:	None
Peak Pointers:	32/64-bit
Other Software:	None

Results Table

Benchmark	Copies	Base Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Peak Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	2	**299**	**91.0**	299	91.0	298	91.2	2	**299**	**91.0**	299	91.0	298	91.2
416.gamess	2	720	54.4	717	54.6	**719**	**54.5**	2	679	57.7	683	57.3	**681**	**57.5**
433.milc	2	220	83.4	220	83.3	**220**	**83.4**	2	**220**	**83.4**	220	83.4	220	83.4
434.zeusmp	2	**298**	**61.2**	298	61.1	297	61.2	2	**298**	**61.2**	298	61.1	297	61.2
435.gromacs	2	**328**	**43.5**	330	43.3	328	43.5	2	331	43.1	336	42.5	**332**	**43.0**
436.cactusADM	2	**427**	**56.0**	428	55.8	424	56.3	2	**427**	**56.0**	428	55.8	424	56.3
437.leslie3d	2	336	56.0	**333**	**56.4**	333	56.5	2	333	56.5	338	55.5	**333**	**56.4**
444.namd	2	**427**	**37.6**	427	37.6	426	37.6	2	**420**	**38.1**	421	38.1	420	38.1
447.dealII	2	275	83.3	275	83.2	**275**	**83.3**	2	275	83.3	275	83.2	**275**	**83.3**
450.soplex	2	350	47.6	351	47.6	**350**	**47.6**	2	**343**	**48.7**	342	48.7	343	48.7
453.povray	2	**151**	**70.4**	151	70.6	151	70.4	2	**127**	**83.5**	128	83.4	127	83.5
454.calculix	2	**257**	**64.3**	257	64.2	256	64.4	2	**257**	**64.3**	257	64.2	256	64.4
459.GemsFDTD	2	**451**	**47.0**	451	47.1	453	46.8	2	**451**	**47.0**	451	47.1	453	46.8
465.tonto	2	336	58.6	335	58.8	**335**	**58.7**	2	329	59.7	**327**	**60.1**	325	60.6
470.lbm	2	370	74.3	**371**	**74.1**	371	74.0	2	370	74.3	**371**	**74.1**	371	74.0
481.wrf	2	**276**	**80.9**	276	80.8	276	80.9	2	268	83.3	**268**	**83.3**	268	83.4
482.sphinx3	2	**712**	**54.7**	714	54.6	712	54.8	2	**697**	**56.0**	695	56.1	698	55.9

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 copies to the cores
```

Platform Notes

```
    BIOS Settings:
    C-State enabled in BIOS
```

General Notes

```
    Environment variables set by runspec before the start of the run:
    LD_LIBRARY_PATH = "/root/SPECcpu12.1/smartheap:/root/SPECcpu12.1/ic12.1-libs/ia32/:/root/SPECcpu12.1/ic12.1-libs/intel64"
```

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CPU2006 license: 11
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Test date: Nov-2011
Hardware Availability: Oct-2011
Software Availability: Aug-2011

General Notes (Continued)

```
Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
memory using RHEL5.5 with binutils-2.17.50.0.6-14.el5
Stack size set to unlimited using "ulimit -s unlimited"
Transparent Huge Pages disabled with:
echo never  > /sys/kernel/mm/redhat_transparent_hugepage/enabled
Filesystem page cache cleared with:
echo 1>        /proc/sys/vm/drop_caches
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>
```

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
```

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CPU2006 license: 11
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Test date: Nov-2011
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Base Optimization Flags

C benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3
```

C++ benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3
```

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

Benchmarks using both Fortran and C:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3
```

Peak Compiler Invocation

C benchmarks (except as noted below):
```
icc    -m64
```

```
482.sphinx3: icc -m32
```

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

```
450.soplex: icpc -m32
```

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

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

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
```

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$SPECfp\_rate2006 = \qquad 62.0$

IBM System x3250 M4 (Intel Pentium G840)

$SPECfp\_rate\_base2006 = \quad 60.8$

CPU2006 license: 11		**Test date:**	Nov-2011
Test sponsor:	IBM Corporation	**Hardware Availability:**	Oct-2011
Tested by:	IBM Corporation	**Software Availability:**	Aug-2011

Peak Portability Flags (Continued)

```
    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
```

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) -opt-mem-layout-trans=3(pass 2)
                -prof-use(pass 2) -static -auto-ilp32

       470.lbm: basepeak = yes

    482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -opt-mem-layout-trans=3
                -unroll2
```

C++ benchmarks:

```
      444.namd: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
                -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
                -prof-use(pass 2) -fno-alias -auto-ilp32

     447.dealII: basepeak = yes

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

     453.povray: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
                -no-prec-div(pass 2) -opt-mem-layout-trans=3(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: -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch
```

Continued on next page

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CPU2006 license: 11
Test sponsor: IBM Corporation
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Test date: Nov-2011
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Peak Optimization Flags (Continued)

459.GemsFDTD: basepeak = yes

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) -unroll4 -auto -inline-calloc -opt-malloc-options=3

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) -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -opt-prefetch -static -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: -xSSE4.2 -ipo -O3 -no-prec-div -static -auto-ilp32

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic12.1-linux64.html
http://www.spec.org/cpu2006/flags/IBM-platform-linux64-revB.20111206.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-ic12.1-linux64.xml
http://www.spec.org/cpu2006/flags/IBM-platform-linux64-revB.20111206.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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