SPEC® CFP2006 Result
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IBM Corporation

IBM System x3100 M4 (Intel Core i3-2100)

$SPECfp^{®}2006 =$ 48.8
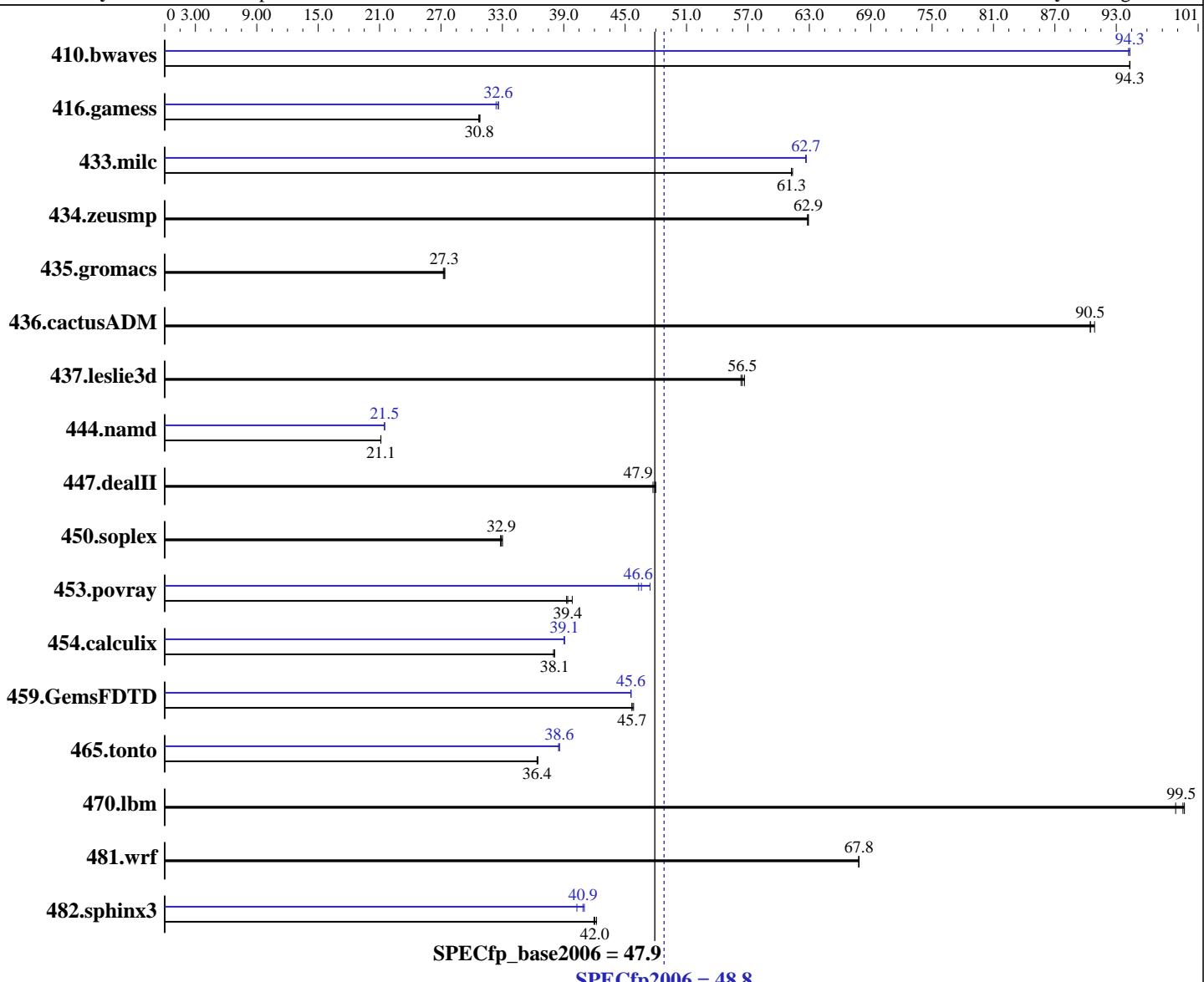
$SPECfp\_base2006 =$ 47.9

CPU2006 license: 11
Test sponsor: IBM Corporation
Tested by: IBM Corporation

Test date: Nov-2011
Hardware Availability: Oct-2011
Software Availability: Aug-2011

Benchmark	Base	Peak
410.bwaves	94.3	94.3
416.gamess	30.8	32.6
433.milc	61.3	62.7
434.zeusmp	62.9	
435.gromacs	27.3	
436.cactusADM	90.5	
437.leslie3d	56.5	
444.namd	21.1	21.5
447.dealII	47.9	
450.soplex	32.9	
453.povray	39.4	46.6
454.calculix	38.1	39.1
459.GemsFDTD	45.7	45.6
465.tonto	36.4	38.6
470.lbm	99.5	
481.wrf	67.8	
482.sphinx3	42.0	40.9

SPECfp_base2006 = 47.9
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Hardware

CPU Name: Intel Core i3-2100
CPU Characteristics:
CPU MHz: 3100
FPU: Integrated
CPU(s) enabled: 2 cores, 1 chip, 2 cores/chip, 2 threads/core
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

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: Yes
File System: ext4
System State: Run level 3 (multi-user)
Base Pointers: 64-bit

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L3 Cache:	3 MB I+D on chip per chip
Other Cache:	None
Memory:	8 GB (2 x 4 GB 2Rx8 PC3-10600E-9, ECC)
Disk Subsystem:	1 x 250 GB SATA, 7200 RPM
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	144	94.3	**144**	**94.3**	144	94.3	144	94.3	**144**	**94.3**	144	94.2
416.gamess	**637**	**30.8**	635	30.8	638	30.7	**601**	**32.6**	600	32.6	605	32.4
433.milc	150	61.3	150	61.4	**150**	**61.3**	146	62.7	147	62.7	**146**	**62.7**
434.zeusmp	145	62.8	145	62.9	**145**	**62.9**	145	62.8	145	62.9	**145**	**62.9**
435.gromacs	**261**	**27.3**	262	27.2	261	27.4	**261**	**27.3**	262	27.2	261	27.4
436.cactusADM	132	90.5	**132**	**90.5**	131	90.9	132	90.5	**132**	**90.5**	131	90.9
437.leslie3d	167	56.3	166	56.7	**166**	**56.5**	167	56.3	166	56.7	**166**	**56.5**
444.namd	380	21.1	379	21.1	**380**	**21.1**	373	21.5	**373**	**21.5**	373	21.5
447.dealII	238	48.0	240	47.7	**239**	**47.9**	238	48.0	240	47.7	**239**	**47.9**
450.soplex	253	33.0	254	32.8	**253**	**32.9**	253	33.0	254	32.8	**253**	**32.9**
453.povray	**135**	**39.4**	134	39.8	135	39.3	**114**	**46.6**	112	47.4	115	46.3
454.calculix	217	38.0	**217**	**38.1**	217	38.1	211	39.0	**211**	**39.1**	211	39.1
459.GemsFDTD	**232**	**45.7**	232	45.8	232	45.7	**233**	**45.6**	233	45.6	233	45.6
465.tonto	270	36.5	**270**	**36.4**	270	36.4	**255**	**38.6**	256	38.5	255	38.6
470.lbm	139	98.8	**138**	**99.5**	138	99.7	139	98.8	**138**	**99.5**	138	99.7
481.wrf	165	67.8	**165**	**67.8**	165	67.8	165	67.8	**165**	**67.8**	165	67.8
482.sphinx3	465	42.0	462	42.2	**464**	**42.0**	484	40.3	**477**	**40.9**	475	41.0

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

Platform Notes

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

General Notes

```
   Environment variables set by runspec before the start of the run:
   KMP_AFFINITY = "granularity=fine,scatter"
   LD_LIBRARY_PATH = "/root/SPECcpu12.1/smartheap:/root/SPECcpu12.1/ic12.1-libs/ia32/:/root/SPECcpu12.1/ic12.1-libs/intel64"
   OMP_NUM_THREADS = "2"

    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 enabled with:
```

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General Notes (Continued)

```
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
Filesystem page cache cleared with:
echo 1>        /proc/sys/vm/drop_caches
```

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:
```
-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
-ansi-alias
```

C++ benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias
```

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Base Optimization Flags (Continued)

Fortran benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
```

Benchmarks using both Fortran and C:
```
-xAVX -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: -xAVX(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: -xAVX -ipo -O3 -no-prec-div -unroll2 -ansi-alias
             -parallel
```

C++ benchmarks:

```
  444.namd: -xAVX(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: -xAVX(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: -xAVX -ipo -O3 -no-prec-div -opt-prefetch -parallel
-static

416.gamess: -xAVX(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: -xAVX(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: -xAVX(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: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xAVX -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-ic12.1-linux64.html
http://www.spec.org/cpu2006/flags/IBM-platform-linux64-revB.20111206.html

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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