SPEC® CFP2006 Result

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IBM Corporation

IBM System x3250 M4
(Intel Pentium G540T, 2.10 GHz)

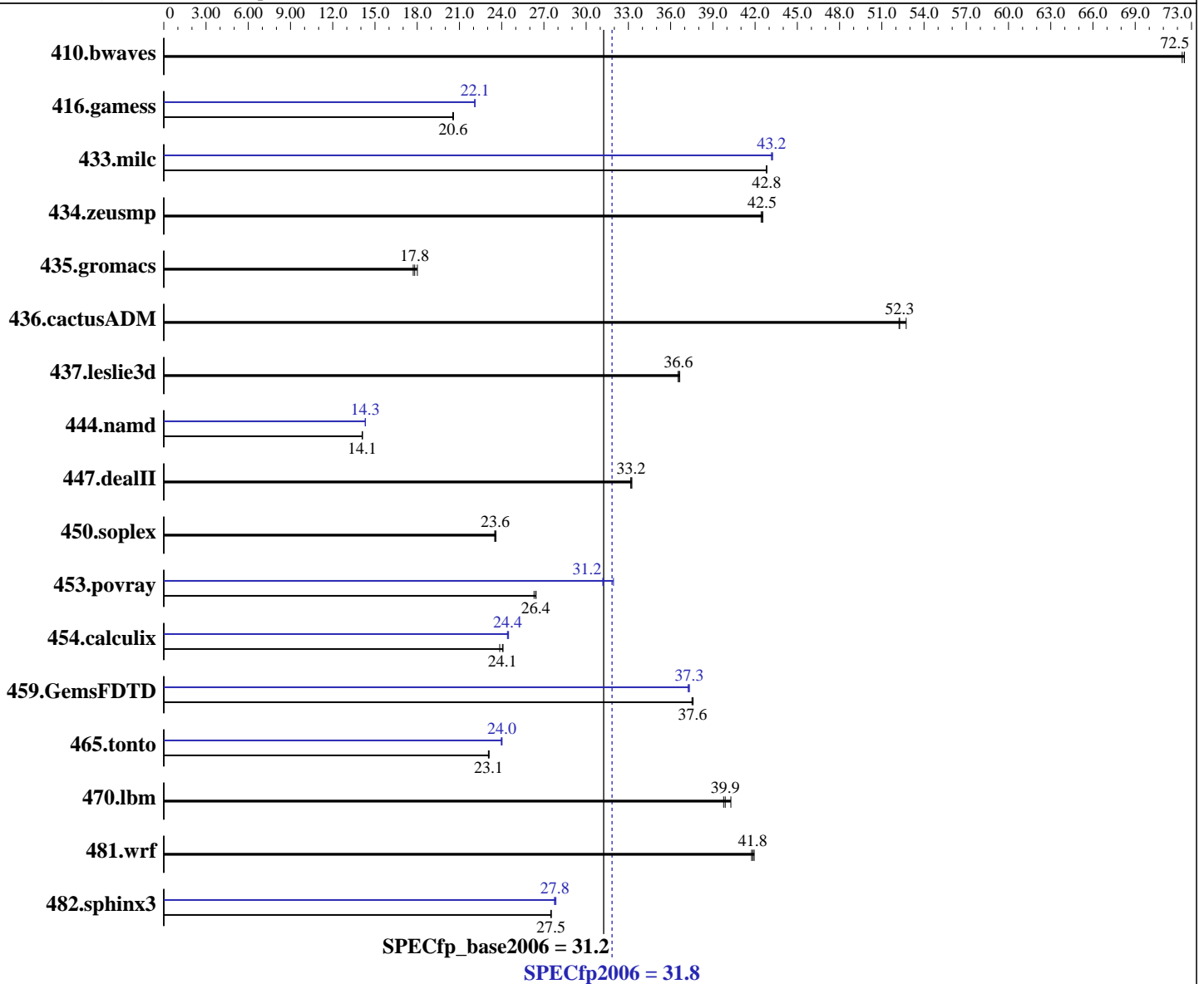$SPECfp^{®}2006 =$ 31.8

$SPECfp\_base2006 =$ 31.2

CPU2006 license: 11	**Test date:** Oct-2012
Test sponsor: IBM Corporation	**Hardware Availability:** May-2012
Tested by: IBM Corporation	**Software Availability:** Dec-2011

Benchmark results (scale 0 to 73.0):

- **410.bwaves**: 72.5
- **416.gamess**: 22.1 / 20.6
- **433.milc**: 43.2 / 42.8
- **434.zeusmp**: 42.5
- **435.gromacs**: 17.8
- **436.cactusADM**: 52.3
- **437.leslie3d**: 36.6
- **444.namd**: 14.3 / 14.1
- **447.dealII**: 33.2
- **450.soplex**: 23.6
- **453.povray**: 31.2 / 26.4
- **454.calculix**: 24.4 / 24.1
- **459.GemsFDTD**: 37.3 / 37.6
- **465.tonto**: 24.0 / 23.1
- **470.lbm**: 39.9
- **481.wrf**: 41.8
- **482.sphinx3**: 27.8 / 27.5

SPECfp_base2006 = 31.2

SPECfp2006 = 31.8

Hardware

CPU Name:	Intel Pentium G540T
CPU Characteristics:	
CPU MHz:	2100
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 6.2 (Santiago) 2.6.32-220.el6.x86_64
Compiler:	C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux; Fortran: Version 12.1.0.225 of Intel Fortran Studio XE for Linux
Auto Parallel:	Yes
File System:	ext4

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L3 Cache:	2 MB I+D on chip per chip	System State:	Run level 3 (multi-user)
Other Cache:	None	Base Pointers:	64-bit
Memory:	16 GB (2 x 8 GB 2Rx8 PC3-12800E-11, ECC, running at 1066 MHz)	Peak Pointers:	32/64-bit
		Other Software:	None
Disk Subsystem:	1 x 146 GB SAS, 15000 RPM		
Other Hardware:	None		

Results Table

Benchmark	Base						Peak					
	Seconds	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**
410.bwaves	**187**	**72.5**	188	72.3	187	72.5	**187**	**72.5**	188	72.3	187	72.5
416.gamess	**952**	**20.6**	952	20.6	954	20.5	**886**	**22.1**	887	22.1	886	22.1
433.milc	**214**	**42.8**	214	42.8	214	42.8	213	43.2	212	43.2	**213**	**43.2**
434.zeusmp	214	42.4	**214**	**42.5**	214	42.5	214	42.4	**214**	**42.5**	214	42.5
435.gromacs	396	18.0	**401**	**17.8**	403	17.7	396	18.0	**401**	**17.8**	403	17.7
436.cactusADM	**229**	**52.3**	227	52.7	229	52.2	**229**	**52.3**	227	52.7	229	52.2
437.leslie3d	**257**	**36.6**	256	36.6	257	36.5	**257**	**36.6**	256	36.6	257	36.5
444.namd	569	14.1	**569**	**14.1**	569	14.1	560	14.3	560	14.3	**560**	**14.3**
447.dealII	**345**	**33.2**	344	33.2	345	33.2	**345**	**33.2**	344	33.2	345	33.2
450.soplex	354	23.6	355	23.5	**354**	**23.6**	354	23.6	355	23.5	**354**	**23.6**
453.povray	201	26.4	**201**	**26.4**	202	26.3	167	31.9	**170**	**31.2**	171	31.2
454.calculix	346	23.9	342	24.1	**343**	**24.1**	337	24.5	**338**	**24.4**	338	24.4
459.GemsFDTD	282	37.6	**282**	**37.6**	283	37.5	284	37.3	285	37.2	**284**	**37.3**
465.tonto	426	23.1	**426**	**23.1**	427	23.1	411	24.0	**410**	**24.0**	410	24.0
470.lbm	346	39.8	341	40.3	**345**	**39.9**	346	39.8	341	40.3	**345**	**39.9**
481.wrf	266	41.9	**267**	**41.8**	268	41.7	266	41.9	**267**	**41.8**	268	41.7
482.sphinx3	708	27.5	**709**	**27.5**	709	27.5	**702**	**27.8**	700	27.9	702	27.8

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

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

Platform Notes

```
BIOS Settings:
Turbo Mode enabled in BIOS
C-State enabled in BIOS
Sysinfo program /root/SPECcpu1.2/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
running on localhost.localdomain Thu Oct  4 14:46:15 2012

This section contains SUT (System Under Test) info as seen by
some common utilities.  To remove or add to this section, see:
```

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Platform Notes (Continued)

```
   http://www.spec.org/cpu2006/Docs/config.html#sysinfo

   From /proc/cpuinfo
      model name : Intel(R) Celeron(R) CPU G540T @ 2.10GHz
         1 "physical id"s (chips)
         2 "processors"
      cores, siblings (Caution: counting these is hw and system dependent.  The
      following excerpts from /proc/cpuinfo might not be reliable.  Use with
      caution.)
         cpu cores : 2
         siblings  : 2
         physical 0: cores 0 1
      cache size : 2048 KB

   From /proc/meminfo
      MemTotal:       16322724 kB
      HugePages_Total:       0
      Hugepagesize:       2048 kB

   /usr/bin/lsb_release -d
      Red Hat Enterprise Linux Server release 6.2 (Santiago)

   From /etc/*release* /etc/*version*
      redhat-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
      system-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
      system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

   uname -a:
      Linux localhost.localdomain 2.6.32-220.el6.x86_64 #1 SMP Wed Nov 9 08:03:13
      EST 2011 x86_64 x86_64 x86_64 GNU/Linux

   run-level 3 Oct 2 15:02

   SPEC is set to: /root/SPECcpu1.2
      Filesystem     Type    Size  Used Avail Use% Mounted on
      /dev/mapper/VolGroup-lv_root
                     ext4     50G   17G   31G  35% /

   Additional information from dmidecode:
     Memory:
      2x Micron 18JSF1G72AZ-1G6D1 8 GB 1067 MHz 2 rank

   (End of data from sysinfo program)
```

General Notes

```
   Environment variables set by runspec before the start of the run:
   KMP_AFFINITY = "granularity=fine,scatter"
   LD_LIBRARY_PATH = "/root/SPECcpu1.2/libs/32:/root/SPECcpu1.2/libs/64"
   OMP_NUM_THREADS = "2"
```

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General Notes (Continued)

```
Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
memory using RHEL5.5
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
```

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
```

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Base Optimization Flags (Continued)

C++ benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias
```

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:

Continued on next page

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Peak Optimization Flags (Continued)

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: basepeak = yes

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-ic12.1-official-linux64.20111122.html
http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-IVB-A.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.xml
http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-IVB-A.xml

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